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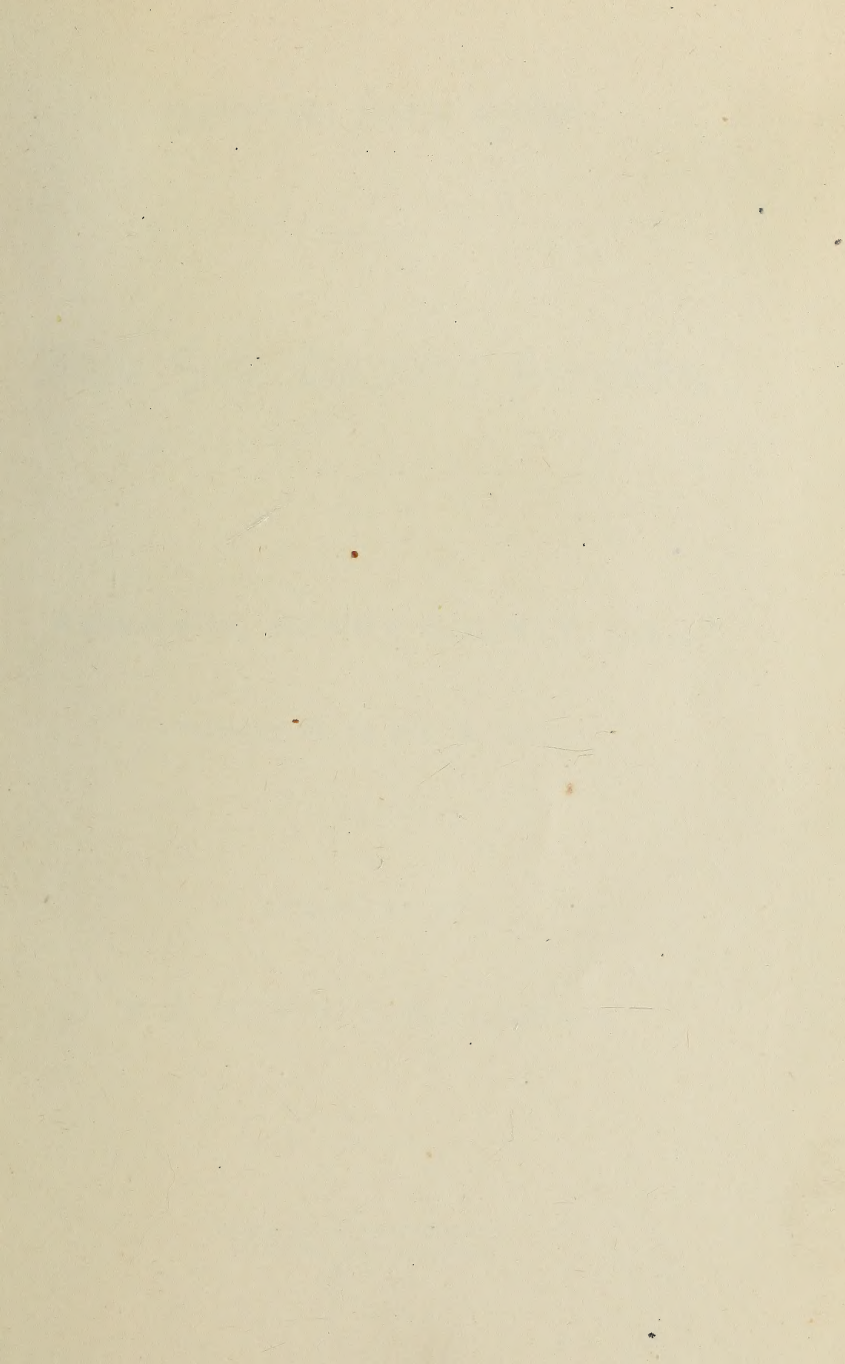
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EIGHTEENTH ANNUAL REPORT

OF THE

Illinois State Dairymen's Association.

HELD AT

KEWANEE, HENRY COUNTY, ILL.,

February 24, 25 and 26, 1892.

COMPILED BY

W. R. HOSTETTER, SECRETARY.

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ILLINOIS STATE DAIRYMEN'S ASSOCIATION. }

MT. CARROLL, ILL., June, 1892. }

*To His Excellency, Joseph W. Fifer, Governor of the
State of Illinois:*

I have the honor to submit the Eighteenth Annual Report of the Illinois State Dairymen's Association, containing papers and discussions at its meeting held in Kewanee, Henry Co., Ill., Feb. 24, 25 and 26th, 1892. I have also the pleasure of reporting the Association prosperous, and I believe doing much for the welfare of the State.

Yours respectfully,

W. R. HOSTETTER.

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| H | Avery, H. W..... | Belvidere. |
| | Avery, J. Dixon..... | Fremont, Neb. |

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| 137 | Benson, John..... | Bement. |
| 36 | Bertolot, J. B..... | Leaf River. |
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| 115 | Blakeway, Ada..... | Ridott. |
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| 15 | Burch, F. S..... | North Evanston. |
| | Burlingame, J. C..... | Delavan. |
| 143 | Burton, William..... | Cherry Valley. |

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| | Cornell, C. W. (20 N. Clark St.)..... | Chicago. |
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| 100 | Kibourne, C. S..... | Oswego. |
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| 73 | Littler, R. M..... | Chicago. |
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| | Moses, H. W..... | Geneseo. |
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| | Murchison..... | Kewanee. |
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| | McCleary, G. S..... | Dixon. |
| | Merriman, W. B..... | Dixon. |
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| 128 | McBride, Mrs. J. S..... | Burton, Mich. |
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| 121 | McDonough, L..... | Davis Junction. |
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| 167 | Munn, W. H..... | Belvidere. |
| 37 | Murphy, R. R..... | Garden Prairie. |

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| | Norton, Mrs. J. H..... | Ashley. |
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| 192 | Pritchard, C. H..... | Belvidere. |

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- 40 Quentin, GeoPalatine.

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 Stewart, Jno.Elburn.
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 Stowe, L. H.Lanark.
 Sniffen, B. W.Sommers, Wis.
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 Schuster, Jno.Marissa.
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| 27 | Taylor, W. H..... | Davis Junction. |
| | Tenney, C. F..... | Bement. |
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| 26 | Thayer Ref. Milk Co..... | Chicago. |
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| 86 | Tripp, F. A.....(4 Clark St)... | Chicago. |
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| | Turner, H. J..... | Paw Paw. |
| | Tharp, J. O.,..... | Kewanee. |
| | Terry, George..... | Shattock. |

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| | Vail, E. M..... | Kewanee. |
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| 179 | Victor, Birt..... | Harper. |
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| H | Vinton, Miss..... | Belvidere. |
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| 226 | Wilcox, C. A..... | Coral. |
| 7 | Wilke, H. F..... | Beecher. |
| 10 | Willson, D. W..... | Elgin. |
| 71 | Woolverton, D. C..... | Belvidere. |
| 169 | Wright, F. M..... | Manteno. |
| | Wright, Capt..... | Albion. |
| | Whitney, A. R..... | Franklin Grove. |
| | Williams, C. P..... | Dixon. |
| | Woods, J. N..... | Gardner. |
| | Walden, W. E..... | Stillman Valley. |
| | Wyman, B. F..... | Sycamore. |

Y

| | | |
|-----|-----------------------|----------------|
| 241 | Younger, J. F..... | Freeport. |
| 41 | Yunker, Lottie L..... | Latimer, Iowa. |
| 4 | Yunker, P. L..... | Latimer, Iowa. |
| | Youngs, H. J..... | Esmond. |

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|-----|---------------------------|--------|
| 122 | Zimmerman, Mrs. G. W..... | Davis. |
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BY-LAWS OF THE ILLINOIS DAIRYMEN'S ASSOCIATION.

OFFICERS.

SECTION 1. The officers of this Association shall consist of a President, Vice-president, Secretary, Treasurer, and Board of Directors composed of seven members, of whom the President and Vice-president of the Association shall be members, and the President *ex-officio* chairman.

DUTIES OF PRESIDENT.

SEC. 2. The President shall preside at the meetings of the Association and of the Board of Directors. It shall be his duty, together with the Secretary and Board of Directors, to arrange a program and order of business for each regular annual meeting of the Association. He shall have power to call special meetings of the Association and of the Board of Directors, and upon the written request of five of the members of the Association it shall be his duty to call such special meetings. It shall be his further duty to call on the State Auditor of Public Accounts for his warrant on the State Treasurer, for the annual sum appropriated by the legislature for the use of this Association, present the warrant to the Treasurer for payment, and on receiving the money receipt for the same, which he shall pay over to the Treasurer of the Association, taking his receipt therefor.

DUTIES OF THE VICE-PRESIDENT.

SEC. 3. In the absence of the President, his duties shall devolve upon the Vice-president.

DUTIES OF THE SECRETARY.

SEC. 4. The Secretary shall record the proceedings of the Association and of the Board of Directors. He shall keep a list of the members, collect all the moneys due the Association (other than the legislative appropriations), and shall record the amount, with the name and postoffice address of the person so paying, in a book to be kept for that purpose. He shall pay over all such moneys to the Treasurer, taking his receipt

therefor. It shall also be his duty to assist in making the program for the annual meeting, and at the close of the said meeting to compile and prepare for publication all papers, essays, discussions, and other matter worthy of publication, at the earliest day possible, and shall perform such other duties pertaining to his office as shall be necessary.

DUTIES OF THE TREASURER.

SEC. 5. The Treasurer shall, before entering on the duties of his office, give a good and sufficient bond to the Directors of the Association, with one or more sureties, to be approved by the Board of Directors, which Bond shall be conditioned for a faithful performance of the duties of his office. He shall account to the Association for all moneys received by him by virtue of said office, and pay over the same as he shall be directed by the Board of Directors. No money shall be paid out by the Treasurer except upon an order from the Board, signed by the President, and countersigned by the Secretary. The books of account of the Treasurer shall at all times be open to the inspection of the members of the Board of Directors, and he shall, at the expiration of his term of office, make a report to the Association of the condition of its finances, and deliver to his successor the books of account, together with all moneys and other property of the Association in his possession or custody.

DUTIES OF THE BOARD OF DIRECTORS.

SEC. 6. The Board of Directors shall have the general management and control of the property and affairs of the Association, subject to the By-Laws.

Four members of the Board shall constitute a quorum to do business.

The Board of Directors may adopt such rules and regulations as they shall deem advisable for their government, and may appoint such committees as they shall consider desirable.

They shall also make a biennial report to the Governor of the State of the expenditure of the money appropriated to the Association by the Legislature.

It shall be their further duty to decide the location, fix the date and procure the place for holding the annual meetings of the Association, and arrange the program and order of business for the same.

ELECTION OF OFFICERS.

SEC. 7. The President, Vice-president and Board of Directors shall be elected annually by ballot, at the first annual meeting of the Association.

The Treasurer and Secretary shall be elected by the Board of Directors.

The officers of the Association shall retain their offices until their successors are chosen and qualify.

A plurality vote shall elect.

Vacancies occurring shall be filled by the Board of Directors until the following annual election.

MEMBERSHIP.

SEC. 8. Any person may become a member of this Association by paying to the Treasurer such membership fee as shall from time to time be prescribed by the Board of Directors.

QUORUM.

SEC. 9. Seven members of the Association shall constitute a quorum for the transaction of business, but a less number may adjourn.

ANNUAL ASSESSMENT.

SEC. 10. One month prior to the annual meeting in each year, the Board of Directors shall fix the amount, if any, which may be necessary to be paid by each member of the Association as an annual due.

Notice of such action must be sent to each member within ten days thereafter, and no member in default in payment thereof shall be entitled to the privileges of the Association.

AMENDMENT OF BY-LAWS.

SEC. 11. These by-laws may be amended at any annual meeting by a vote of not less than two-thirds of the members present. Notice of the proposed amendment must be given in writing, and at a public meeting of the Association, at least one day before any action can be taken thereon.

TRANSACTIONS
OF THE
EIGHTEENTH ANNUAL CONVENTION
OF THE
Illinois State Dairymen's Association
HELD AT
KEWANEE, HENRY COUNTY, ILLINOIS,
February 24-26, 1892.

The convention commenced its regular sessions at 2:30 P.M., February 24th, 1892; President Johnson in the chair.

The REV. MR. DELANO offered prayer as follows:

"Almighty God, our Heavenly Father, we look up to Thee this afternoon and adore and acknowledge Thee as the Creator of the universe. Thou hast made all things, the earth in which we dwell, Thou hast created and blessed us, Thou hast surrounded us by a perfect succession of laws that govern our universe. Thou hast hid in the bosom of the earth all those seeds and plants and ores that are for our well-being here. Thou art our Father and the Giver of every good and perfect gift. We come to Thee and look up to Thee and acknowledge Thy Hand in the affairs of time and life.

"Our Father, we come to thee this afternoon and we thank Thee for the blessings that have attended us as

a people. We thank Thee, our Lord, that these years, as they are going by, are seeing the grand, the mighty civilization, the development of our material and industrial resources, the increase of wealth and the consequent increase of happiness among Thy people. We thank Thee, our Heavenly Father, that our minds are engaged in these great problems that relate to our well-being and to the betterment of humanity, and we come and pray Thy blessing this afternoon upon the gathering together in this convention. May this association be so directed and its work be so done as it shall result in real and permanent good. Bless all who are gathered here and who may be gathered here, and let Thy blessing and Thy grace and thy peace attend us in all that we do, and all that we are that we may leave the world better because we have lived in it. We ask it all for Christ's sake, Amen."

ADDRESS OF WELCOME.

HON. A. K. LADD, KEWANEE, ILL.

It is customary and was arranged upon this program to have our Mayor deliver an address of welcome to you, but circumstances called Mr. Baker to another State, and so, unfortunately for you, I am obliged to try to fill his place. But a bad beginning makes a good ending, it is said, and I believe the outlook for a good meeting is quite promising.

There is no industry in the world as important as that of the farmer. The wealth of the world is derived from the farm, the larger portion of our population is farmers, consequently that avocation should

receive more attention than any other and all others put together. Unfortunately that is not the case; all other industries are grouped, disciplined, reduced to a science, measures to produce the best returns are adopted, concert of action is followed up. The farmer, on the other hand, goes on on his individual plan, farming substantially as his father did. It is true there are improvements in farming, but those improvements are small compared with the improvements in other lines of industry.

It augers well for the farmers that this and kindred societies are organized, and it is well for the farmers of this community that this convention meets here to-day. We are not a large number, but many a large issue has begun with a small beginning, and smaller bodies than this have grown into great importance. Therefore, in behalf of the village authorities, in behalf of the citizens of this town, and at their request, I extend to you a hearty welcome to Kewanee, each and every one of you, and hope that this meeting may be productive of an acquaintance that shall grow stronger with time; that shall be profitable not only to us, but to others that may not be here. We are not a city, we are simply a modest little village, in the midst of an agricultural country that has no superior anywhere, but a country that needs that which you are considering.

It is not for the farmer of this section of the country to compete with the stock raiser of the West, he can't do it, he should give his attention to other things. Instead of farming upon a large scale and in a loose manner, he should consecrate and adopt the most profitable way of using his land. It is generally conceded, I think, that the small things make up the great ones. A few years ago the dairy industry was looked

upon as a very small thing. The farmers who made butter had no cellars, no ice, no churn, except the old dash that was used two or three thousand years ago, and the butter that they made was a sort of sanctified grease. We have grown out of that; there is much good butter and cheese made in the country, but not as much as there should be, and these organizations are helping progress in that line along very fast.

Again, in the name of the citizens of Kewanee, let me say to you we hope you will have a pleasant and a prosperous visit with us, that your recollections of us shall be as kindly as our feelings are towards you, and if that be the case we will be the best of friends. Our town is yours.

RESPONSE.

C. F. DEXTER, CHICAGO, ILL.

Ladies and Gentlemen :

While I had no idea two hours ago of making this response, I do not regret an opportunity of representing this organization in responding to this welcome in a very few words.

We are somewhat acquainted with the town of Kewanee. We have regarded it for a long time as a representative city in a large degree; representative in its importance and in its industries, in its relations to the agricultural community; and we are sorry that the atmospheric and surface conditions are such as not to present it at its best.

We represent an association, the oldest, I believe, in the State and in the Northwest of its class; and we come among you and tinkle our little bell and ask you,

the citizens of Kewanee and the neighboring territory, to come to school a little while to see whether we can add something to the intelligence which is necessary to the progress of all labor. Brain power has come to be understood as an essential factor in all industries. Mere manual labor produces trouble, heart-burn and hard work. When supplemented by intelligence it becomes its very foundation; and we propose to add something, if we can, which shall increase the brain power and therefore lessen the labor, the muscular power, to the advantage of all. We have some knowledge which we think has been gathered through all these years, and we desire to present it in some form. We have what we may call primary instruction, and also for more advanced classes in the dairy interests, and we firmly believe that we can do something to aid your material interests and your general welfare.

Aside from that it is good that we come together to look into each other's faces with friendly greeting—perhaps with a friendly jest, which has nothing of malice in it. There is too little of friendly intercourse among what we may call the working classes, and we all belong to that class in this country in some form. I have realized for more than twenty years how important that feature is in connection with such meetings as this. Often I think to myself, “I don't think I shall go up there this time, it is a good deal of trouble;” but I have gone and it has been good to be there. We are glad to be here, and we hope that we shall leave some impressions for good, and with these few remarks I will close, asking you to remember that I am simply a substitute.

ANNUAL ADDRESS.

PRES. LOVEJOY JOHNSON, STILLMAN VALLEY, ILL.

The time-honored custom of requiring the presiding officer to prepare an annual address was inaugurated eighteen years ago. From force of habit rather than because the occasion actually requires it, the Executive Committee have filled out the program in the way you see.

When we look back over the eighteen years that have passed so rapidly by and note the growth of this Association, when we compare the gathering at our annual meetings with the handful of dairy enthusiasts that met and compared notes of the then present and prophesies of the future, we can get some idea of its growth.

When we compare the dairy industry of to-day with that of twenty years back we must conclude that dairy men do not belong to the "Slow Coach Fraternity." When we compare the physical mental and as a necessary consequence the moral condition of the farmer's wife and daughter, under the old-fashioned tin pan, dash churn style of dairying with the present, though imperfectly developed system of factory work, we must conclude that we are not only on the high road to an era of wisdom and wealth, but that we are fast approaching an era of improved morals. Release from the drudgery of the dairy kitchen gives opportunity for moral as well as æsthetic culture. While good taste would give too much indulgence in the way of mutual admiration, I cannot help feeling that this Association is entitled to no small amount of credit for this growth and development.

While we are able to look back upon a year of more than average activity and prosperity in most lines of business, it is pleasant to know that the farmer, and especially the dairy farmer, has shared largely in this general prosperity. None but chronic croakers today complain of hard times.

One of the most important matters before the Association at this session, should be the subject of a proper display of dairy products at the World's Fair. There should be provision for an exhibition commensurate with the importance of this industry. The matter, as you well know, is in the hands of the State Board of Agriculture.

While we can not believe that any of its members are inimical to our cause, yet the fact is patent to us all that the interest that lies nearest our hearts has not been fully appreciated by many of the board. Yet when we consider the composition of the board, that many of its members represent sections of our State where the dairy interest is unknown, where the humble cow is looked upon as a necessary evil, a sort of adjunct in stock raising, while still others represent districts where the "Lard Barons" propose to dispense entirely with her kindly offices by substituting the product of the steer and unseemly hog, we know that they do not all appreciate the greatness of this industry as we do. Perhaps it is best that we should be placed where we are compelled to ask for what we want. It is policy and wisdom then for us to go very slow with our criticisms.

The handsome appropriation has been placed in the hands of the board, and they are going about the work disbursing it with honest, impartial intentions.

As we told you at the last annual meeting, the Exec-

utive Committee issued a call for a national meeting of representative dairymen. As a result the Columbian Dairy Association was organized. Under the auspices of this organization plans have been matured on a scale never before undertaken.

The World's Fair Commissioners, through their chief of Agriculture, Mr. Buchanan, who, with an amount of liberality un hoped for, has seemed to appreciate our every want, have arranged for a dairy school, providing buildings for a working dairy, and barns large enough to accommodate three hundred of the finest cows in America. This is intended and undoubtedly will prove to be educational in its scope as well as the grandest display of the kind ever undertaken.

But let us not forget that this is a national affair and that its success will reflect no especial credit or honor upon our State. If we expect to hold the proud position we now have among our sister States something must be done and that quickly. To this end, waving the formality of an invitation, I would suggest that the Association appoint a committee whose duty it shall be, after thoroughly considering the matter, to formulate some plan by which the entire Dairy intelligence and strength of the State shall be combined to secure a display that shall be a credit to all concerned.

I feel confident that the State Board will be glad of suggestions from this committee. Certainly we shall lose nothing by asking, even persistingly urging.

There is one subject that comes up at every annual meeting. It never will down, but nothing practical has yet been the result of our discussions. I refer to the adulteration of butter and cheese.

Speaking from the standpoint of a dairyman, as well

as a consumer, bogus butter, bogus cheese, bogus money, in fact any thing bogus, should be an enemy of mankind. Talk as we may, hope as we may, the bare fact that the manufacture of the stuff has increased from twenty-one million pounds in 1887 to forty-four million in 1891 stares us in the face. Our national law is all right as far as it goes, but it does not go far enough. It should be made to protect the consumer who sits at the table of the hotel or boarding house. It should be supplemented by State legislation.

There seems to be a kind of paralysis among our dairy farmers. They annually and semi-annually resolve, but do little else. Our representative from Boone, an honored director of this Association, introduced a bill last winter at Springfield correct in principle. It required the manufacturer of ox butter to have a color of their own, but he got but little support from those most interested.

Brethren, why not try a new track. When you go to your caucuses this summer get a pledge from your candidate upon this question. Don't support a man, be he ever so strong a Republican, Democrat or Prohibitionist, unless he is willing to take a stand on the right side of this question so vital to your prosperity and health.

Possibly in the beginning of this contest we asked too much, a law to forbid the manufacture of butterine. This raised the cry, and very naturally, of class legislation.

If Mr. Armour or Swift has discovered a substitute for butter, or if Mr. Burrell has secured a patent for making a substitute for cheese, these parties should, if their product is healthy, be protected in their manufacture.

If there should be any consumer whose taste is so vitiated that he must have these villainous compounds, if there should be one specimen of mankind that has become so soured on his digestive organs that he finds comfort and satisfaction in loading them up with cold pressed lard and cotton seed oil churned in buttermilk, no vender of creamery or Jersey butter should be allowed to impose his goods upon him. We insist that as some of us have tastes in the direction of pure cow butter, we should enjoy equal protection. If forbidden to counterfeit, there would be little sale for butterine.

There are three things that this Association may properly undertake to do. First—To pass strong resolutions favoring the Hatch Original Package bill and then follow it up with petitions praying Congress to enact the same. Second—To appoint a committee who shall take pains to look up the matter and see if there is not criminal negligence among our revenue officers in not enforcing the national law. Third—To appoint a committee on legislation who shall use all legitimate means to secure the passage of a bill similar to the one introduced by Mr. Reed.

I do not sympathize with the sentiment that would prohibit these articles merely because the sale of them tends to lower the price of the commodity that I and my friends happen to be engaged in producing. This would be selfish.

Of course, the forty-four million pounds of bogus butter put up on the market last year displaced so many pounds of genuine butter. If it were just as good, just as healthy, and were placed upon the market and sold for just what its name indicates, there would be no reasonable grounds for complaint. If in the race for supremacy the cow when placed upon an

equal footing cannot compete with the hog or steer, let her go. But we need not expect to exterminate this evil at once. As long as there is big money in a business, it will die hard. It is a foe born of the greed of gain. It should be treated as the common enemy of mankind. There is another way in which we can fight it, and upon these lines we may properly give a portion of our time at this session. We may lessen the cost of milk, cut down the expense of making till we can undersell them and leave a decent margin of profit.

I may be charged with being visionary, but I firmly believe that the time is coming and that it is not far away when the product of the dairy will be sold at twenty-five per cent. below the present price, leaving a better margin of profit than any other farm product.

How will this state of things be brought about? Get better cows, keep only the best, take better care of them, raise cheaper feed, take better care of the milk, get better butter-makers and salesmen.

These subjects will be discussed as they come before you. How shall we get better cows? Pay more attention to breeding, there is more in breeding than in breeds. While it would not be wise to go to the extent the crank did, who in order to produce a breed of chickens that would not scratch up his garden, crossed a Shanghai and a Bantam, hoping to get a breed with legs of an uneven length so that when scratching time came the effort would tumble him over and he would leave the garden a disgusted chicken.

Experience has demonstrated the fact that the best milkers of to-day, whether among our native or imported stock, are the result of careful breeding. There is much difference between the clean-cut beautifully

formed Holstein or the fawn-like creamy Jersey and the old-fashioned scrub of an early day. The symmetrically formed beef animal of today is a great improvement on the long-haired, peaked-hipped, raw-boned scrub that early feeders were compelled to buy in southern Wisconsin. It does not follow from this that every dairyman should be deceived by some smooth-tongued unprincipled breeder and undertake to run an entire dairy of thoroughbreds. This has ruined too many well-meaning enthusiasts.

If you are persuaded that on the whole the Holstein is the most profitable cow, don't fall in love with everything that is black and white, or every animal simply because she is small and apparently worthless with a Jersey pedigree. Get the best milking strain of whatever breed you fancy. Save the best calves. Follow this rule and it will not be long before a fifty-pound milk cow or a two-pound butter cow will be the rule instead of the exception. If the cow had a voice to speak she would add to this, give us an improved breed of dairy-men, more intelligent, more kind and gentle.

Having the best cows, let us turn our attention to the care and feeding of them. Feeling the importance of this part of the work, a prominent place will be given to such practical men as Mr. Boyd of Elmhurst, and others. Mr. Sawyer will explain the importance of having a well-balanced ration, while Mr. Graham will tell you how cheaply he winters his stock on ensilage. If it be true that one can cause two blades of grass to grow where but one has grown before, what shall we say of the man who makes it possible to produce two pounds of butter where but one was made before? It is unnecessary to bring long columns of figures to show that dairy farming if intelligently pursued is profit-

able. Let whoever is in doubt take the train and spend a few days in the dairy districts of our State. The banks will tell him that the farmers are their best depositors. Merchants will tell him that it is an easy matter to sell them goods, and that they are sure pay once a month.

There is not the danger of overdoing the business that many suppose. While we live there will be a healthy demand for all the fine goods that can be made. It is second-class goods that go begging. The demand, within reasonable limits, will increase with improvement in quality.

While the amount made in the Elgin district has been more than doubled within the last ten years, the average price at the factory has not varied more than a cent or two. This in spite of the fact that there was forty-four million pounds of bogus butter made last year.

We are fortunately situated. We live in the dairy belt; we have the water, climate, proximity to markets, all the conditions that favor dairying.

The intelligent dairyman will seek to know what is the best, balanced ration, and having found it will bend all his energies to produce it with the least possible outlay. In this connection I want to call your attention to the work at our experiment stations. Read the bulletins and get the benefit of scientific men whom the State and nation employ to experiment for you.

We can not overestimate the value of the work of these scientists. Prof. Babcock spent time and money, and wasted quantities of material, before he was certain that a given amount of acid mixed with a given amount of milk will show a result that determines the quality

of the milk. By means of this a farmer can decide which of his cows are worthless. The factory man can improve the morals of his patrons.

Prof. Farrington has greatly simplified the manner of using these tests.

Every dairyman should feel that he has a personal interest in the station at Champaign and this Association should be in close touch with its work.

Gov. Hoard has well said, "The passing need of the hour is a wider diffusion of dairy knowledge among the farmers of the State." Dairy enterprises are being established faster than dairy knowledge is being gained for their safe conduct.

What better plan for the diffusion of this knowledge than to hold these conventions?

It shall be our aim to draw out the best thoughts upon the subjects before us.

With this end in view, may I ask all present whether you are on the programme or not, to aid with your questions and suggestions? We are here to learn. Let us commence the session right by laying aside the reserve that so many of you have. No matter if there should be a clashing of opinions; this friction of ideas is sure to result in stirring up a deeper interest in the work. Let this fact be constantly before us; it is not safe to depend on what we already know. We shall never reach the Mecca of our hopes if we do. Our competitors, who have their eyes, ears and mouths well open, will outstrip us in the race for wealth and distinction.

What if some of us who take part in these meetings are not the snuggest kind of farmers? It does not follow that what we say is not true. In every county of the State you will find wide-awake communities, and good

farmers. Trace out the cause of this thrift and you will find book farmers, talking farmers, in the majority. The knowledge or ignorance of some of the seemingly minor matters about dairying often brings success or failure.

We have met to discuss these subjects. While we may not decide them to the satisfaction of all, if an appetite for research is awakened the time will not be lost.

THE CHAIRMAN:

As they say in meetings of a little different character than this, the meeting is now formally opened and the time is yours.

On motion of Mr. A. B. Hostetter, the chair appointed the following committee to take into consideration the president's address, and report thereon to this convention:

James Graham, John Boyd, E. M. Vail.

INFLUENCE OF FEED ON MILK.

J. Y. SAWYER, CHICAGO.

In discussing this subject, it will be necessary to first look into milk to see of what it is composed. In 100 pounds of average milk we have four pounds of butter fat, four and ninety-five one-hundredths pounds of milk sugar, three and three-tenths pounds of casein or cheese matter, seventy-five one-hundredths pounds of mineral matter and eighty-seven pounds of water.

It is a well-known fact that some cows give much richer milk than others, and also that some breeds of cows give richer milk than others; now the question arises, of what does this richness consist?

We very frequently hear a dairyman say "That cow

is a grand good butter cow," meaning that she gave, either a large quantity of milk, or else that she gave a fair quantity of milk very rich in butter fat. Again, we hear a dairyman say, "My cows are not very good butter cows, but are grand cheese cows," meaning that their milk did not have a large amount of butter fat, but was very rich in casein or cheese matter.

Let me state right here that a case of this kind does not exist; wherever you find a cow that gives milk low in butter fat, her milk will also be low in casein and other milk solids. I do not mean by this that a sample of milk very low in butter fat will be correspondingly low in other solids, but that milk with fat *below* the average *can not* have other solids *above* the average.

It is a well-established fact that the solids in milk, other than butter fats, are almost stationary, that is, in 100 pounds of milk it is very rare to find less than eight pounds or more than ten pounds of milk sugar, casein and mineral matter, while it is not uncommon to find a cow giving milk with only two and one-half pounds of butter fat and another cow giving milk with eight pounds of butter fat to the 100 pounds of milk. Such being the case, it is of the utmost importance for the dairyman to know how to produce milk high in butter fat, and to show whether feed alone will do this or not is the object of this paper.

During the past two seasons it has been my privilege to attend dairy conventions in nine different States, also many farmers' institutes, at all of which I tested with a Babcock Milk Test samples of milk brought in by the farmers; in nearly every case where the test showed a high per cent. of butter fat the first question asked was "What was that cow fed," showing that the almost universal belief is, that *butter fat can be fed into*

milk; and should we take a vote of the farmers before us to-day, I think, without a doubt, a large majority would be on the affirmative side of the question. Nevertheless, I propose to take the negative side, and say that the average per cent. of butter fat *can not* be perceptibly increased in the milk of a cow that is well fed and cared for, by a change of feed.

I am ready to acknowledge that more butter can be produced by a change in feed, but where this is the case there is also an increase in the flow of milk, and there are cases where the percentage of fat has been increased for a day or two by a change of feed, but it soon drops back to the normal condition; there is always, however, an increase in percentage of fat as the period of lactation advances; this varies with different cows, regardless of feed.

In this connection allow me to introduce the opinion of men of national reputation, brought out by *The Rural New Yorker*, July 18, 1891, under the headings, "Feeding Pail, or Parent," "Is Quality Bred or Fed Into a Cow."

1. Take a good milch cow fed upon a generous and well-balanced ration, can any subsequent feeding of selected foods increase the per cent. of fat in her milk?

2. If an increase of fat results, will there not be an increase in the other solids and a corresponding increase of fluid, so that it is really the same class of milk?

3. If we can feed quality into milk, can not any big milking cow be made to answer for the butter dairy?

S. M. Babcock, Madison, Wis., says:

"My opinion is that the quality of milk so far as it is measured by the per cent. of fat depends almost entirely

upon the individual peculiarities of the animal and, so long as sufficient nutriment is supplied and consumed, very little upon the kind of food. Of course, the food must be of such a nature that it will be relished by the animal and sufficiently concentrated to supply the needed nutriment in a moderate bulk, otherwise a cow will not or can not eat enough to maintain the normal functions of the body. If the kind of food has a material influence upon the composition of milk, it would be possible by modification of the ration to so change breed characteristics that a typical Holstein cow would give Jersey milk or a Jersey cow Holstein milk. This, so far as I am aware, has never been accomplished in a single generation, and I do not believe that the individual character of any animal, so far as it is manifested in the quality of milk, can be materially changed by the kind of food. I have known Holstein cows that gave very rich milk, and I have known Jersey cows that gave very poor milk, but these cows always did this independently of the ration.

External conditions, which often are not apparent, seem to have a greater influence upon the richness of milk than the kind of feed. This is shown by the fact that the daily variations in the per cent. of fat, in milk from the same cow, when no changes have been made in the ration, are often greater than occur when a radical change in food is made. Change of environment, change of milkers, in fact anything which tends to excite or worry the cow, will often cause a decided variation in the per cent. of fat in her milk, even when the yield is practically the same. Moreover, the same conditions which increase the fat in the case of one cow may diminish it with another.

Feeding experiments conducted with a number of animals usually show that they are affected differently by a change of ration. With some cows the milk may contain the same per cent. of fat as before the change; with others, it may be richer, and with others poorer. The general average may be for or against a given ration, but it is quite often the case that the two sides are so nearly balanced that leaving out a single animal would change the whole result. These individual peculiarities, which appear to be due to heredity, make it very difficult to determine satisfactorily the influence of food upon the quality of milk, and are undoubtedly the chief cause for the conflicting opinions which exist regarding the value of certain foods for milk production."

G. H. Whitcher, New Hampshire Station, says :

"Long-continued feeding in special lines becomes a factor in breeding; but only a limited factor, the character of the ration, if ample and reasonably well balanced, will not vary the quality of the milk appreciably, that is, food produces milk of such character as the individuality of the cow prescribes, and any attempt to feed Jersey milk into a Holstein cow will prove a failure.

A deep milker may be a good dairy cow even if her milk is relatively low in butter fat. Ten thousand pounds of three per cent. milk give 300 pounds of actual butter fat, while 5,000 pounds of six per cent. milk give only the same amount. Quality alone does not decide the merit of a cow, hence the error in assuming that only Channel Island cattle are suited to dairying. Many and, in fact, most cows which give very rich milk give a small quantity, while the converse is also true, that "big milkers" as a rule give poor

milk; quantity and quality are antagonistic; if you breed for quantity you breed away from quality and *vice versa*."

The following conclusions taken from Bulletin No. 9, of the New Hampshire Experiment Station, I have as yet seen no reason to change :

"I feel warranted in saying that a given animal by heredity is so constituted that she will give milk of a certain average composition; by judicious or injudicious feeding the amount of milk daily may be very largely varied, but the quality of the product will be chiefly determined by the individuality of the cow. We may fertilize the soil around our grafted apple tree and cause it to produce double the amount of fruit that it would have produced uncared for, but we shall never change the Baldwin Apple into a Pound Sweeting, or the Crab apple into a Pippin; the kind of apple is determined by the character of the tree, the amount by the character of the food; so of the cow. A Short-horn cow can never, by feeding, be changed into a Jersey, and the man who starts out to increase the fat in milk by simply changing the food has, in my opinion, a very difficult task to perform. Slight variations are always cropping out, whether we change the food or not, but changes of per cent. of fat, of any considerable amount, do not appear to trace to food influence, so long as the food is reasonably well proportioned and sufficient in quantity. Quantity is the result of food influence. Quality is the result of the make-up of the animal."

W. H. Jordan, Maine Station, says:

"Quality of milk is unquestionably bred into a cow, and not fed in. My own convictions in regard to the points which you raise are as follows: 1. The per-

centage of fat in a cow's milk is not materially influenced by the selection of foods, provided she is fed a generous and well-balanced ration. 2. In a large amount of feeding of milch cows which this station has done during the last five years, we have observed that changes in food have produced changes in the amount of milk rather than in its character. Generally speaking, an increase of the total amount of fat produced has been accompanied by a corresponding increase in the other solids, as well as in the volume of milk. 3. This question was answered in my first statement. A big milking cow belonging to certain breeds that produce thin milk can not have Jersey quality fed into her milk any more than one can feed brains into a Digger Indian. That quality must come into an animal of those breeds, if it comes at all, through a process of selection and persistent good feeding, and will be attained only after several generations, perhaps not then."

After an exhaustive treatise on each of these questions by scientific men the following answers are deduced:

W. W. Cooke, Vermont Station, says:

"If a cow is well fed on good nourishing food which she relishes, is well cared for and is comfortable in all her surroundings, she will give a certain normal quality of milk. The normal quality can not be raised to any appreciable extent by any change of feeding that can be made, whether from dry to succulent or from succulent to dry; either by a change from bran to corn meal and oats or any of the common changes of food believed by farmers to influence the quality of milk. So much for the cow in a good healthy condition. Now if the food of this cow is increased we may get and probably will

get an increased product, that is, we will get more butter fat in 24 hours, but the increase will be due to the increased quantity of milk, not to its increased richness. When we pass outside of these conditions I do not believe any one is smart enough to tell what is going to happen.

If we change from good food to poor and insufficient food a cow will certainly shrink in quantity. She may give the same quality of milk or milk richer in butter fat. A cow that is being actually starved will usually give milk richer in butter fat than under normal conditions, but of course the quantity of milk will be small, and when a cow is changed from starvation rations to an abundance of excellent food there will be usually at first a decrease in the quality of the milk, and just what is going to happen in any individual case can not be foretold. There are individual cases in which a cow on an increasingly heavy grain feed has given richer milk, and such cases are put on record and it is claimed that they show that richness can be fed into milk. There are plenty of other cases in which the increase of feed has produced a large flow of milk of a medium quality or even of a poorer, and this they say nothing about.

If one were to take 100 milch cows that had not been receiving heavy feed and give them all good liberal rations for 12 months in the year, he would probably find a small number that would show an increase in the per cent. of fat in the milk. If fifty out of the one hundred that gave the richest milk at the end of the year, were selected and bred from, and if their calves were tested in the same way and the half which gave the richest milk again were selected and so bred from and selected for twenty generations, it would be

possible to get a herd of cows giving extra rich milk. If at the same time the other half of the herd had been selected and bred for the cows giving a thin quality of milk and that testing and selection were carried out for twenty generations we would get a herd of cows giving thin milk, even if all the cows in both experiments had received exactly the same kind of food."

I do not think that any observing farmer would deny the truth of this last statement, although in the same breath he might claim that the food did have a good deal to do with the quality of the milk.

Now answering the three questions categorically :

1. The answer would certainly be "No."

2. The added butter would be obtained from the added quantity of milk rather than from increased richness. But another point comes in there: when a man begins on a test of changing the food, he is quite apt at the same time to take more care in the setting, skimming and churning, and especially when he comes to the weighing of the butter, he will weigh it as soon as worked, before packing and very often before salting, and judge from the weight of the extra butter that his new feed has given him an increased richness of milk.

3. If the answer to the first question is "Yes," then, logically, the answer to the third should be "Yes." But if anybody were to ask these two questions of the same man on different days, and in regard to specific cows in the same herd, he would probably answer "Yes" to the first, and "No" to the second, for all farmers know by experience that they can not make their cows giving large quantities of thin milk change and give rich milk. In fact, we would consider one an idiot should he undertake to do anything of the kind,

and yet this man will claim in the abstract that he can feed richness into the milk of the cow.

In conclusion, allow me to repeat the offer which I have often made, that if any six farmers can agree on the character of the ration which they claim is the best for feeding richness into a cow's milk, and will also settle on the proper ration for feeding thinness into a cow's milk, I shall be very glad to make a thorough test of the matter not only on our own herd, but on several others also. As a fact, when rations have been given us, said to produce rich milk or thin milk, they have been very much mixed up, one man claiming that a certain feed, bran, for instance, gives rich milk, while another is equally positive that bran gives thin, watery milk. And in regard to the effect of feed on the character of milk we find a wide variety of opinion, and a series of more than 1,000 tests which we completed ten days ago seem to show conclusively that the popular idea in regard to succulent pasture feed having an effect on the milk is decidedly wrong."

John Gould says:

1. "In my dairy experience, I find that it makes no difference how generously I feed the cows, they each keep right on giving the same kind of milk—possibly more of it—so far as I can judge. A heifer may improve in the quality of her milk until she becomes fully developed as a cow, and then the character of her milk becomes fixed, or substantially so. Milk varies in fat contents from day to day. Disturbing causes I think affect the milk fats more than any of the other solids; but for an average for the season the fats are not greatly, if at all, changed with respect to the cheese and sugar. I am not aware that there are any authentic tests made public that go to show or

prove conclusively that a cow can be fed so that the per cent. of fat will be about normal in its relation to the other solids.

2. Breed and individuality control the relation between the solids in milk, if the conditions are as in No. 1. So far as we can find, it takes more fluid to obtain more solids. I think that after a certain point in quality has been reached, the further increase of solids stops, and the fluid may be added to, making the milk relatively poorer.

3. Cows making great records for milk and fed to the last limit, seem in the quality of their milk to answer No. 3 in the negative. A cow may give so much thin milk that the total weight of fat solids may exceed the total weight of solids in another cow's milk giving a much greater per cent. of fats. The real question is, can a cow giving $2\frac{1}{2}$ per cent. of fat in 80 pounds of milk daily be made to give 80 pounds of milk with five per cent. of fat? and then the answer is, No. One example: A noted cow at a test gave daily about 67 pounds of milk. Her feed for fitting her for the test was as follows, daily: 10 pounds of oats, 12 pounds of bran, 2 pounds of corn meal, 2 pounds of oil meal and all the wilted corn fodder (with ears) that she would eat; the milk tested, fat solids, 2.44 per cent.; total solids, not fat, 8.61 per cent. Another cow fed the same ration gave 2.14 per cent. of butter fat. A cow may give so much milk that the result will be a large amount of butter; 50 pounds of $2\frac{1}{2}$ per cent. fat milk will make as much butter as 25 pounds of five per cent. milk, so in that sense, a cow giving a large quantity of milk may be a good butter cow, but her 50 pounds of milk can never by feed be made five per cent. milk." As explained by Professor Armsby: "The

quality of milk that a cow will give is determined by breed and individuality, and the amount she will give is determined by her feed."

These opinions are based upon actual experiments, or conclusions reached by the experiments of others covering a number of years, hence are of great value to all dairymen.

The Cornell University experiment station has for the past four years been experimenting on feeding cows grain while on grass pasture, to see if it would pay to feed grain under such conditions. The grain-fed cows in every case gave more milk and more butter, but not enough to justify the expense and extra labor. Now, as to the percentage of butter fat, by looking at the tables showing percentage of fat it was impossible to tell which were the grain-fed cows, showing conclusively that feeding grain had no influence on the quality of the milk. Perhaps it would be well to add that the grain ration consisted of four quarts per cow per day, composed of two parts corn meal, one part wheat bran and one part cotton seed meal by weight; this was fed to eight Jerseys, while eight others had no grain, all on the same pasture and cared for exactly alike.

Please do not understand me to say that it does not pay to feed cows well; high feeding will always pay, and starvation or scrimping of feed is a losing game every time. By a change of feed we may be able to increase the flow 25 or even 50 per cent., and have the milk of the same quality, which will of course increase his profits very materially; but the dairyman that says his milk is richer than his neighbor's, simply because he feeds corn while his neighbor feeds oats and bran, certainly does not know what he is talking about, and he would learn more with a Babcock Milk Test in one

week than he would by following his theories for a lifetime.

DISCUSSION

THE CHAIRMAN: Mr. Sawyer is at your demand. Mr. Allen, do you believe what he says?

MR. ALLEN: No, sir, I do not by a long ways.

MR. HOSTETTER: You said, Mr. Sawyer, that the quantity of milk could be fed into a cow, but not the quality. Now, I would like to know if you could make a twenty-five pound Jersey cow give fifty pounds by feed?

MR. SAWYER: A Jersey cow that gives twenty-five pounds isn't likely to increase very much.

MR. HOSTETTER: Well, one that gives ten pounds, can you make her give twenty-five?

MR. SAWYER: That depends on the cow. I should want to know about the feed the cow is already getting.

MR. ALLEN: Did you ever actually make a cow that was giving twenty pounds of milk on good, fair feed, did you ever so change her feed as to make her give thirty?

MR. SAWYER: I don't know as I did. You are putting the limit right there. As a general thing, I will guarantee that you can go home, and inside of three days, by a change of feed you can increase the quantity of your milk very perceptibly. Now, whether it would pay you to do it, is a question for you to decide.

THE CHAIRMAN: Some men it might pay. It wouldn't Mr. Allen, because he feeds already so as to get every drop from his cows that they are capable of producing.

MR. ALLEN: My experience has been different from Mr. Sawyer's. I don't know that you can take all cows, but you can take some and make them give

richer milk by proper feed, that is, to increase the amount of butter fat in the milk per hundred pounds.

MR. SAWYER: You have some cows that will give four per cent. of butter fat, and you have others that will give six per cent. Now, how are you going to work to make those four per cent. cows give six per cent.?

MR. ALLEN: I will tell you what I did. This is a question that I have thought over more than one day; in fact, I have thought of it for years, and I have read every article that I can find bearing on the subject, and I have read in the common newspapers that after feeding so and so you could increase the richness of a cow's milk. I tried it, and I did not succeed. I saw statements of men that they could do it, and I saw records of cows where, according to the record, it was done, and I wanted to know how it was done and I inquired. I remember that three or four years ago when this association met in Springfield, just before the meeting of this association, there was a meeting of Jersey breeders, and I was present at both meetings, because I wanted to see those Jersey breeders and hear what they had to say, and among them was one gentleman that has been very successful in getting incredible amounts of butter from individual cows, or at least very large yields of butter, and he did it from very small quantities of milk, and I was fortunate enough to become acquainted with him, and I asked him about it. I told him what I had done, and how I had failed in doing it, and says he, "The trouble with you is, you did not keep it up long enough." One of his statements was a good deal like this. Says he, "Give me a cow that gives thirty-five pounds of milk and I will give her feed"—as he expressed it, "I will

put steam in her, and when she gets down to twenty-five pounds of milk a day, she will make over two pounds of butter." I told him how I had got my cows to eat enormous quantities of feed, and yet I was not getting the results that I looked for. Says he, "You didn't keep it up long enough." Well, I had a cow that I had just tested the year before, and the milk record, at the time that I tested her, varied from thirty-eight to forty pounds of milk a day. Well, she was fed good, strong feed. I was feeding then hominy meal, corn hearts, and she was on pasture. It was in the summer time and she was fresh. I set her milk and raised the cream and churned the butter. I couldn't make two pounds of butter from that yield. I tried it for seven days running, and I couldn't do it, and I gave up testing her, that is, I gave up keeping the account of the quantity of butter, but I continued her feed, fed her liberally, and the next year, about the same time, she dropped her calf about the same time of year that she did the year before, and then I commenced testing her again. This year she gave not over thirty-five pounds of milk a day, less than she had the year before, and I separated it, and I gave her a week's test, but I couldn't make two pounds a day any day that I tested her. I was busy at that time, so that I was not able to keep an account of her milk. I kept an account of the weight of her milk all through the year, but I kept no account of the quantity of fat, thinking that later on I could test her again, and I continued a good, heavy feed. I gave her then shorts from the mill, that is, fine bran, really the hearts of the wheat. I fed her very liberally, she calved in July and I tested her in August.

In October I found time again to make another test,

and she was giving then from twenty-five to twenty-seven pounds of milk a day. I tested her for five days, and in those five days I made ten pounds and nine ounces of butter from those weights of milk per day. That was the way she ranged. So that showed me, as I think, that the feed did have something to do with it, and that the increase in butter fat was not in proportion to the quantity of milk that she gave. When she gave forty pounds of milk she produced less than two pounds of butter, and when she gave twenty-five pounds she produced over two pounds of butter. I think that case is at variance with Mr. Sawyer. I want to say this; that I have never been able to find any record where any individual cow was taken and highly fed for a long period of time and then tests made; that is, a test begun in the beginning, and the feeding and the testing continued for a year or eighteen months. If you have noticed all these high yearling tests you will remember, for instance, Mary Anne of St. Lambert, and Bisson's Belle; you will notice that the effect from this long feeding is to get more butter out of a small quantity of milk, and I think that right in that point is where Mr. Sawyer is mistaken; that in all the tests that he has enumerated the feeding of the cows has been for a short time, not for a long time.

MR. SAWYER: On this last point I would simply state that the Cornell University has kept account of the percentage of fat. Remember the percentage of fat is a little bit different from setting the cow's milk and churning it, one year with another, because it is utterly impossible to get your conditions exactly the same every time as far as making the butter is concerned, while the percentage of fat is the same, no matter what the cow gives. In this case, where the

experiments have been carried on for four years, they have never been able, with but two exceptions, to increase the per cent. of fat one-half of one per cent. By that I mean the average of the year. These two exceptions that I speak of were cases where in the spring of 1890 they bought two cows that were very near the starvation point. They were so thin that they called them "Shade" and "Shadow." The average per cent. of fat in their milk was kept for that whole year, and then for the whole of 1891, and this last year was one per cent. above the year before. We must all remember that the test of one cow don't prove a general rule. If Mr. Allen's cows had increased in that proportion all the way through his herd, then I think it would be perfectly reasonable to suppose that he had increased his quality by feed.

MR. MONRAD: Mr. Allen said he made these tests, one in July, and the other in October, about four months between the two tests. Now, isn't it a fact that the period of lactation has considerably more to do with it than the feed? We all know that every cow, as the time passes along, gives a richer milk, and the butter fat is increased. I think your experiment has no value because they were made with four months between.

MR. ALLEN: Well, then, I will go on and tell you some more. I wanted a seven days' test instead of five days' test, and I continued it seven days, but I made an error in feeding that cow. I fed her rye and it produced a very slight indigestion, and from that point on I couldn't make any where near the two pounds of butter per day, and with all the feeding and all the changing I was not able to get it back again.

MR. MONRAD. That is exactly what I wanted to

draw out. There have been a good many people who have fed for records, so that in a short time they were able to put the cow in an unnatural and feverish condition, and the milk would be richer, but you never see any of these gentlemen feeding for high records willing to go into a test to last for six months, and why? Simply because they would kill the cow. I tell you, you can put a cow in such a condition that she will give less milk and richer milk, but if you continue it, you will kill your cow.

MR. DEXTER: I am asked to put the question to Mr. Sawyer, then what is the use of our feeding a ration that is supposed to be richer in butter fat than some other ration? I will only say that I whispered an answer that all rations have plenty of butter fat, and it is simply a question of the constitutional habits of the animal to extract that butter fat. Mr. Sawyer mentions eight pounds as the maximum. I wish to say that I heard a statement made by Prof. Henry, at Madison, a short time ago, in which it was stated that an animal had produced a percentage of seventeen pounds to 100 pounds of milk. I only want to state that the quantity of butter fat in the feed does not determine this important question. The constitutional character of the animal determines how much butter can be taken out of it, or butter fat, and how much goes to other functions of the body.

MR. SAWYER: As I stated in my paper, and as has been stated by these other parties, you take a given feed that is properly balanced, that is, where your coarse feed is not too heavy, nor your grain feed, so that the animal can eat it all with a good, keen relish. Now, then, you take that same grain feed, which I infer contains a much larger amount of butter fat than

others, and you will get no more butter fat from that cow because every cow is limited to what she can handle, and a cow that is a butter cow is going to manufacture butter out of the feed regardless of the quantity of fat that there is in the feed. That is something that the cow handles herself, and there is no man can tell how she does it. One cow will put it in butter, and another will put it on her ribs.

MR. COX (of Kentucky): I came up here at the suggestion of your secretary, and am very glad to meet with you. Now, it seems to me that this question under discussion is rather split. In the first place, some cows will produce a great deal more butter from the same feed than others will, but then the same cow fed a different ration, a ration richer in fat, will produce more from the rich feed than from the poor feed. Now, I take the other extreme. Will a cow, fed on turnips, produce as rich milk as she will if she is fed on grain?

MR. SAWYER: I think a little turnips along with the grain will help your cow much better than all turnips or all grain, and right there is the fine point where every dairyman must study his cow. It is utterly impossible for any man to go to work and lay down a rule and say you can handle all cows thus and so and get results thus and so. Mr. Allen was trying to bring his cow up all the time, and was feeding until he overdid the thing, and he couldn't bring her back to where she was before, and that is where a very fine point in feeding dairy cows comes in.

THE CHAIRMAN: We are very fortunate in having with us to-day Prof. Farrington, who is well qualified to talk on this matter, and we would like to hear from him.

PROF. FARRINGTON: I am set down for a paper on Friday forenoon, and will present some ideas on this point at that time. I think the case all depends on exact observation on this matter of the feed, and although I appreciate Mr. Allen's statement and the work that he has done, still I know how many points there are to observe, in taking the weights from day to day, etc. It seems to me that he has shown that for a short time you can increase the richness of the milk, but you can't keep it up. I have been testing some cows very accurately since last April, and testing with the Babcock tester, which shows the actual amount of butter fat, and not the amount of butter, which makes considerable difference. You know that sometimes you will leave a good deal of butter fat in the buttermilk, and at another time, perhaps with another feed, you will leave a different proportion, and Mr. Allen changed his feed, and did not test his skim-milk, or analyze the butter. It may be that the cow produced the same quality of milk all the time, but he secured different quantities of butter. On Friday I will show you the records of a cow which I have kept very carefully, and I will say that it shows the same result that Mr. Sawyer has reached.

MILK VALUE OF SHADE TREES.

E. M. VAIL, KEWANEE, ILL.

This matter of shade trees in reference to dairying is a little off my ground. If you wanted me to say something about shade trees for ornament for our homes I might have been able to say something that

would at least be interesting to myself; but it may be that shade trees for dairying are quite as important as shade trees around our homes for ornament. Of course, the idea of providing them for the cow would be to give them comfort, and anything that would add to the comfort of the cow would be to our profit as dairymen. I believe it is a fact that the dairy has flourished most successfully in wooded districts, where the cows have got the benefit of shade trees through force of circumstances. Of course, in such places they have not had to make much provision for them, but out on our prairies here it is quite necessary that you plant shade trees. An old gentleman here in town spoke to me some time ago about shade trees, and wanted to know which was the best one. I named over several and asked him what he wanted them for, whether on the street or in his yard, and he ripped out a big cuss word and said, "No, I want them for the old cow." He keeps one cow, and, next to his wife, I think he thinks more of her than anybody else as far as I know. He is a man that uses those cuss words sometimes, but I think when the stenographer up in the better country sets down the record there will be a large mark in favor of that old man on account of his kindness to his cows. Dairymen use great care in providing the proper stables and surroundings, and I think they should use the same care in providing this comfort for their cows, because I believe they will find that they have benefited themselves as well as the cows.

DISCUSSION.

MR. SAWYER: I would like to ask Mr. Vail if it is not a fact that cows that are provided with shade in the summer time prefer to stand there and fight the

flies rather than go out and hustle for grass, and if they do that they will not eat so much, and perhaps not enough to keep up the flow of milk.

MR. VAIL: I think perhaps they might hustle a little more for grass than they would have to, because while they were standing out in the sun and worrying they would consume so much of their feed that it would be necessary for them to eat more to make up for it, which they wouldn't have to do if they were standing still comfortably in the shade.

MR. SAWYER: But would the flies bother them as much while they were scattered over the pasture as they would if they stood under the trees?

MR. VAIL: I think the flies would be quite as numerous in the sun as they would be in the shade.

THE CHAIRMAN: Mr. Sawyer, did you ever notice, the flies bother you worse in the shade than in the sun?

MR. SAWYER: Always. They don't bother me when I am out driving over the country, but they do when I am on the porch or trying to take a little snooze.

MR. MAC MILLAN: I have had some experience in feeding cattle, though I have not much experience in dairying; but I have found that, in preparing a bunch of cattle for the market, shade trees are a detriment to them. Your cattle do better and will put on more pounds of beef without a shade tree in the pasture than they will with it.

THE CHAIRMAN: Have you watched that carefully enough to know; have you experimented day after day and week after week, or have you only guessed at the weight that they put on?

MR. MAC MILLAN: I haven't carried that out extensively, of course, but I have weighed some, and I am fully convinced that when my cattle are in the pasture

where I have shade they spend altogether too much time fighting flies. If there is no shade, they will spend more time in grazing on the pasture, and I have read in some of the agricultural papers that other men have the same experience.

MR. GRAHAM: I think shade trees are a great benefit. I know when I expose my cows to the sun there is always a large shrinkage in the milk, and I have felt obliged to put them in the barn sometimes when I had no shade trees.

Convention adjourned to 7:30 P. M.

Convention met at 7:30 P. M.

Music, Kewanee Cornet Band.

DAIRYING.

MRS. FRANK GOOD, OF KEWANEE.

Among the different branches of farming, there is one that can be made to yield much pleasure and profit, and, at the same time, add to the value of the land; yet in many localities there is no branch which receives so little consideration as that one—Dairying.

Perhaps it is because of the close attention which is needed to make it successful; perhaps on account of the lack of knowledge of the best ways and means of carrying it on, although these can be readily obtained from first-class dairy papers; generally it is that the farmer thinks it does not pay. If the milk could be at once disposed of, more would engage in the business, but with all the hard details attending the care of the cream, the churning and marketing of the butter, there

is at once a scarcity of men to do the work. Many localities have well equipped creameries to which the milk is taken; these possess many advantages, but without them each is obliged to manufacture and market his own butter, to become a private dairyman, and whether he will be a successful one will depend greatly on himself, whether he will be willing to give all the time and attention necessary.

Dairying is a special business, and a successful dairy needs a special purpose cow, just as any special business requires a special man—the one can not profitably do without the other. As an example of what the special purpose cow can do, take the work of the great queen of the Jerseys, Bisson's Belle, who made over 1,028 pounds in one year. Of course not many of us expect to have a cow that will do that well; but by care and feed we can increase the number of pounds each year until we shall have an average yield of which we may be proud. The average farmer has cows that are special in the sense that they will raise a skim-milk calf, make 75 or 100 pounds of butter when the price is low, and remain idle when it is high; while the special purpose cow will net him two or three times as much for his labor, if she is taken care of the year around.

I think the Jersey the typical cow for the butter dairy. Her milk is richer in butter fats and yields more butter to the hundred pounds of milk than any other; the cream is of excellent quality and the butter of fine flavor and color. For these reasons better prices can be obtained. The amount and quality of the butter depends also upon the food of the cow.

In summer when the cows are on grass, a little corn-meal fed night and morning gives solidity to the butter, improves the flavor and adds to the quantity.

The cows must not be given any old or musty food nor allowed to drink from a filthy pond or mud-hole. *Pure* water and pure food.

A variety of food is also to be desired, and this can be had by everyone by a little extra labor.

In winter feed liberally of bran, roots, corn meal and hay, to keep up the quantity. The sugar beet or mangel wurzel are very good roots to feed as they give no odor to the milk or butter, while the flavor of the turnip or cabbage is easily detected; but whatever is fed, let it be the *best*—the best is cheapest, even for the cows. You can not get food too good. Provide warm stables with good light and ventilation; there is no economy in an open shed or in a shed with great cracks through which the wind may sweep.

A room with a half open door or window requires much fuel to warm it, and as the food of the cow is in part used to warm her body, she will need much more in a draughty stall or stable than in one that is snug and warm.

Do not let your cows out in cold or disagreeable weather, except for a short time. There is always a shrinkage from exposure. Good food and plenty of it, pure water, warm quarters well ventilated, and you have furnished your cow the means to accomplish the purpose for which she is kept—the greatest possible amount of milk or butter at the least expense. After you have attended to all these points you must still further extend your watchfulness to the care of the milk and cream. You can not have good butter without the greatest care in the dairy. In this department there is oftentimes a lack of convenient and labor-saving appliances and the same farmer who next summer will bring home the latest improved mower and binder will allow his wife to care

for the milk with the same utensils in kind for that purpose that her great-grandmother had. She must strain the milk into heavy jars; and these will probably be set away in the cellar with the vegetables. Twice each day, the milk must be skimmed—these heavy jars lifted, washed and set away again.

The amount of strength required, aside from other considerations, is great; while a comparatively small amount of money invested in a small creamery would lighten the labor very much. In small dairies I think the deep setting system is best. This need not mean extra labor for the farmer in pumping water for cooling purposes. He can so place his tank, that the water will run from it into the watering trough.

One very important point in favor of deep setting is the rapidity with which the cream is raised. Each milking can be skimmed before the next is brought in. This very essentially shortens the time till the cream can be churned. Anything which shortens the time from the milk pail to the butter plate is an improvement. Other points in favor of this system are less time required for skimming, fewer utensils to be washed, the removal of the milk from bad odors, and sweet skim milk for feeding purposes.

Another good way to obtain the cream is by the use of the separator, but perhaps this would not be found as profitable in small dairies. Whatever method is used, skim while sweet. When different skimmings are to be churned together, they should be thoroughly mixed, in order to ripen evenly. Sweet and sour cream should not be churned together. At least twelve hours should pass after mixing before churning.

Each one must judge for himself at what temperature the cream should be churned. A good rule is a

little below 62° F. in summer, and a little above that in winter. By the use of the little dairy thermometer, the person who churns two or three hours and does not know why the butter does not come would find his labors very much shortened.

When the butter has come and is in the granular state the churn should be stopped, and by the addition of a little brine or water the butter will rise and the buttermilk can be easily drawn off; after this the butter should be washed until the water can be drawn off clear. After draining for a few minutes the salt should be sprinkled over, at the rate of about two ounces to the pound—less of some brands than others; then it should be thoroughly stirred and allowed to stand for a few minutes to dissolve the salt. After this it may be taken to the worker and worked well once, and then it is ready to pack in any form desired.

Of course, you will not lack for customers if your butter is of good quality. If you have given your cows good food and shelter, if you have cared for the milk that all bad odors are kept away from it, that the cream is perfectly ripened and churned, that the churn and all utensils used are perfectly sweet and clean, you will find ready sales and profitable returns. You will find, as I said in the beginning, there is no branch of farming which can be made to yield more pleasure and profit than dairying.

ADDRESS.

MRS. HOLMES, GALVA, ILL.

Ladies and Gentlemen, and especially my Dairy Brothers:

When Max O'Rell was in our country two or three years ago, he made a hasty trip through the country and went back to France, and he said he had been in America and it was an immense place. He said he found that we had 60,000,000 people, and nearly all of them were colonels. I thought this afternoon, as I sat there in the first dairy meeting that I have ever attended, that if he had been here and heard your earnest words and discussions, and saw how scientifically you were treating these questions, if he could also visit St. Louis to-day and see so many industrial societies that have met there and are discussing great questions to-day and to-night, he would not go back and say that the majority of us were colonels, but that he had never touched the industrial part of this country in his hasty trip through it; talking from the platform, being entertained at the clubs, he knew nothing of the industrial interests of our country. I must say that I felt proud this afternoon. I had known only through the newspaper of this association. I went back in memory to my New York dairy work, and I remembered when my mother, who was a Boston lady, and who came to Illinois many years ago when the country was new, I remembered hearing her say that she did her first churning with a spoon and a pitcher.

I remember also that as I grew to be a girl, and my

brothers grew up also, how we would go down in the cool cellar and churn and churn and churn, hour after hour before the butter would come, and we would look longingly out until mother would come down and experiment; she would put in cold water and then hot, and after a long while there would be little specks of butter. Mother always had to finish the work, because none of us could go through the complex motion of churning up and down and around at the same time. The water was brought from a distant spring, and she worked the butter very carefully, having none of the modern improvements, and at last it was ready for market, and my mother would get in the wagon with my father, with some new mown hay on top of her butter, and she would go to the city and sell the butter, and then the money was always hers. She had the butter money, and she also had the egg money. I didn't think so much of it in those days, because I did not understand what I understand now, how much that meant to my mother. I remember the pride with which she would count over her money in those days when she was getting eight and ten cents for her butter and five or six cents for her eggs, and she was very apt to spend it all for groceries; nevertheless she spent that money herself, it was hers to spend, as she wished. I understand it all now, the perfect control of that butter money, and this afternoon as I sat here and heard you talking of your dairies and creameries, I said to myself, "Where is the farmer's wife's money, her own, especial money for her own use that she used to get from the butter?" I was sorry to think that way about it, but it looked to me as if the pin money of the farmer's wife is gone, because when the cream is sold to the creamery, it is perfectly natural that the farmer takes the money.

I am a little afraid of saying what I thought of saying, because since I came to the platform Bro. Dysart has scolded me for what I said a week ago in Cambridge. He said I took a doleful view of things. I don't know that I do that, but, my brothers, I do feel that there are some things that you want to look at. I was going to say especially my farmer brothers, but I won't. All of my brothers, we want to consider the question of who owns the pocket-book. Your presiding officer asked me what my subject was to be, and I said, "Don't give it, let me come to it easy." I was afraid to give it away, because there is not a proper understanding of this pocket-book business. I know a gentleman who understands it perfectly. I was once in his family long enough to get an insight into their methods. In his library was a book laid out on the desk in which the family expenses were kept. The pocket-book, his wife told me, was kept in the same room, and when she wanted to buy something she went and took that pocket-book, and took out what money she needed, and went to the book and put down that she had spent so and so, a dollar or five dollars, or whatever it was. The husband did the same thing exactly. I was interested in one incident that occurred there. A young son was going out of town into a neighboring town, and as he started away the father called him back, and asked him, "Have you plenty of money to go to the neighboring town?" "Yes." "How much have you?" He told him how much he had. It was just enough to take him to the town and back again, and his father said, "Go and get a dollar, William, and put it in your pocket; you don't need to spend it, but I want you to have it, you will have more self-respect." That was the secret of it, he wanted his wife to have that same self-respect.

A little while ago I was taking a trip in the southern part of the State. I was waiting at the depot, and a lady came to me and asked me to take her mother to a certain city. Of course I said I would be glad to do so; the old lady of between seventy-five and eighty sat down in the seat with me, and we began talking. She was a farmer's wife, and we had this conversation. I said, "You look as if you were not strong." "No," she said, "I have not been strong, and the truth is, I have had a hard life. My husband and I bought our farm, and we had to mortgage it, and we were saving with all the power we had of saving when my husband was taken sick. We had seven children, and he had asthma for fourteen years and I took care of him and with all the efforts I could make to save that farm from this mortgage, I worked, and I did it." She said, "I have some young sons coming on and they helped me free the farm from the mortgage." And then her eyes lighted up when she said, "I was able to educate three of my sons, and then after fourteen years illness my husband died." She said, "I think I could have borne the work of the farm, but taking care of him, as well as the work of the farm, broke me down." I was anxious to know how she was placed, and I said, "When your husband died, what did you get?" And the old lady looked at me as if she had never thought in that line in her life. "Why," she said, "I got what they set off for me." It was a little pittance, and she was living in a very straightened way, her children in a better condition, and yet, with all the effort of paying off the mortgage and saving the farm, it was not hers. Helen Gougar wrote a story a few years ago that was right to the point. The lady in her story was telling her troubles and how she was getting through

it, but every once in awhile she would come back to the words, "But the farm was mine." That was her watch-word, you could see that through that she had a power and control of matters which she could have in no other way.

I want to say to you that the farmer's wife, among all women on this earth, does the most to help earn the money on the farm; and yet when she is through she doesn't own a penny of it. Now, my brothers, you all know this is true. I knew a woman who was one of the hardest working women I ever saw, who came to my mother and borrowed a little money because she could not get any from her husband when she wanted to get up a little entertainment for her newly-married son. You will say, and say very justly, that it was a species of dishonesty. If you only knew how many wives had to be dishonest you would be surprised. You probably don't think how much her pin money means to her and what she will resort to to secure it. You say she has enough to eat and drink and wear, and yet the fact remains that she has nothing unless the husband gives it to her. I have heard wives say again and again, "I have done things that I am ashamed to acknowledge to you, because I hadn't a cent unless I had done them." One of the richest women of Chicago, a millionaire's wife, told a friend of mine that the girl in her kitchen had more money than she. She said, "I can go to Marshall Field's, and I can get the most elegant dress there is there. I can go to any place in the city of Chicago and have my account charged and it will be paid; but I couldn't give five cents for any benevolent purpose." Now, I know a lady lawyer in Chicago who advises a man when he comes to her to take his property jointly with his wife. I want to tell

you my husband has done that way; when we have taken new pieces of property it is in my name, as well as my husband's. I say it is a shame for any woman who works as a farmer's wife does work to go along year after year without being able to feel that anything belongs to her.

It is true that it makes a woman feel more self-respect. The first time that I put thirty dollars in my pocket as the result of my first month's teaching, I felt like a new girl, I felt that life had something for me that it never had had before. Up to that time I had to ask for everything I needed, and had done it with that hesitating feeling that every girl and woman feels. Let me tell you, especially you farmers, that the pocket-book belongs to your wife, equally with you; she has earned it and earned the property that you own just as much as you have, and ought to be provided for in a way which will give her that self-respect to which she is entitled. It is true that the girls of this country are earning money as never before, and I glory in it. I rejoice that the women of this country are now in almost every employment which men are and are earning their living when they want to. A young woman has plenty of money now, plenty of situations are open to any woman that will fit herself for work, but when it comes to the wife, unless it is given to her as a gift, she has not a cent and it produces a state of things that you, my brothers, ought not to permit. The mother of your son, your wife, ought to have the same freedom of thought as any of you have, and the same self-respect that a man feels when he has money in his pocket. When we come to that state of things we shall have a better class of children born. I have seen many, many poor, tired,

worn-out looking women, who wanted to do something a little outside of their homes, and were not permitted to do it, simply because they were not permitted to handle one cent without special permission. It is a life of beggary and a life that no mother of children ought to live, so let me say to you that if you want good children and self-respecting wives, take your property so that the husband and wife will be joint owners, so that no matter what happens, your wife will have a proper provision after your death. You all know how Lucy Stone took in hand the matter of righting the laws of Massachusetts on this subject. We have laws in Illinois by which a married woman can earn and own her own property; but that is only within a few years, and that grew out of Mrs. Livermore's experience with a washerwoman, who for years and years saved up her scanty earnings to put them into a little piece of property; and when she went to draw the money out of the bank to pay for the property, she found her drunken husband had been there the night before and taken it. Mrs. Livermore said then: "God helping me, I will never rest until that law is changed," and she and some others went to Springfield, and that very session it was changed.

My brothers, think over these things, and if you haven't done what is right in this matter of the pocket-book, you, who are such noble men, if you haven't done right in this matter, think it over. I do not believe it has been intentional, it has been carelessness; the wife is often so patient and tender and don't want to find fault, and she don't want you to know that she feels as if she is a beggar, but she does, and even from the very best husband it is hard for a woman to ask for money, money that she has earned in her way just as much as

her husband in his. It has been said that when women have the opportunity of helping make the laws that these things will be righted, and I think that is true; but, after all, it depends on you to right them. Don't think, with Brother Dysart, that I am abusing you. I think the American man is the noblest man in the world, and I agree with Max O'Rell that the American woman is the favored woman in the world in many respects, and yet we are in this one particular suffering more than you know; not simply for the money, my brothers, but the self-respect that comes with having it and knowing that you have earned it; so please consider, while you are considering cows and dairies, and the best methods of producing and the best material for feed and all these other things, don't forget the patient woman at your side, who will say very little whether you treat her ill or well, but will bear it all, and yet whose life you can brighten a great deal in many ways. What we ask is to be by your side with equal opportunities and advantages, and to feel when we have worked hard through life that we have the same chance in material things that our husband had.

MUSIC—DUET, "NO HOPE BEYOND."

Messrs. Dean and Davis.

ADDRESS.

HON. SAMUEL DYSART, FRANKLIN GROVE.

Ladies and Gentlemen :

Brother Johnson is playing you a little trick. He knows just as well as I do that I can't make a speech, and I am getting too old to commence to learn; but I

want to explain about what Mrs. Holmes has just said. I was at Galva last week and she made a speech there, and she told us many truths—so many that I felt kind of nervous about it, and when I met her to-night my heart was full of pity for some of you, and I begged her to spare you folks, because I was afraid some of you would feel badly.

Seriously, gentlemen, there is too much truth in what she says. We do not realize at our homes the importance of allowing wives to feel that self-respect, the dignity, the personal nobility of character that a little money in the pocket gives. If you can't trust your wife, who in the world can you?

While I am on the floor I want to say a few words of caution in reference to the course that our farmers are pursuing. If you could go to Europe and travel through the rural districts, you could see where the land has been tilled constantly for over two thousand years and yet is as productive to-day as it was when first broken; the system of agriculture over there, combined with the dairy interest, and the fact of the immense population, has brought the land to a condition of greater fertility than it was at that ancient day. Now, what are we doing here in the United States. Less than three hundred years since we took possession of the country. How do we find it to-day? In those New England States, where our forefathers commenced farming, the land is burned out, a barren waste, its farmers starved out, and gone away, great areas of that land, and little, if any of it, excepting where dairying has been carried on, is worth within fifty dollars of what it was a few years ago. Now, we come into Pennsylvania where I was born and raised, and where land used to be worth \$125 an acre, and

to-day can be bought for \$75. In Ohio and Indiana the same course is being followed, and, gentlemen, the same course is right here in Illinois, and Henry county, too. Your land to-day is not worth as much for agricultural purposes as it was when you commenced on it, not by a long shot. The statistics show that. Now, if you continue on your constant grab, grab, shipping your grain to market without giving your soil any help, history will repeat itself. What has overtaken them in New England and Pennsylvania and parts of Ohio is bound to come here to Illinois. In that damp little country of Holland, where I traveled two or three years ago, I saw land being dug up from the sea and the water kept out by immense dykes. Thousands of windmills keep them from being submerged, and I thought of the immense amount of labor and money that has kept them where they are. It has cost heaps of money, and yet when I saw thousands of handsome dairy cattle that were hardly above the water, and I learned that, in three hundred years, that country had not exported a dollar's worth of product, except butter and cheese, and yet, to-day, she has more wealth per capita than the people of any country in Europe, it set me to thinking. These are facts. I also understand that in a country that was originally poor and cold, in Iceland, the land is not by nature what the land is here, but they got into the dairy business many years ago, and they have built up their country. You will find by the statistics, that in the dairy districts land is getting richer every day, while ours is growing poorer. The question comes up, What kind of legacy are we going to leave to our children? Shall not we change? Shall we not join hands with these dairy people who come amongst us to keep off this threatened mis-

fortune? If you will adopt the dairy system our land will increase in value, and you will have enough to give your wife and children a little, and have as much left as you have got now.

It is our duty as citizens to think on this important subject, and the danger into which we are drifting.

Shall we turn our attention to dairy farming? The last census (1880) showed that there were sixty per cent. of the population of the United States engaged in agriculture and rural pursuits, and in 1890 only forty per cent. The idea that some have expressed to me, "Why, if you all go to dairying who is going to eat the butter and cheese and drink the milk"—if you will think for a moment, the consumption is increasing faster than the production to-day. Butter averages higher to-day than it did twenty years ago, certainly much higher than forty years ago.

Count the numberless creameries springing up all over this country, yet the production of butter evidently is not increasing any faster than the consumption. I do not think we need worry about that, it is quite certain that the consumption of dairy products in this country is going to increase quite as fast as the production, and in the meantime, by the system of dairy farming, you will let your land rest, you will build up the land.

MUSIC—Flute Duet.

ADDRESS—AIR.

JONATHAN PERIAM, EDITOR "PRAIRIE FARMER," CHICAGO.
Mr. President, Ladies and Gentlemen of the Association :

I doubt if I can say much that will interest you to-night, but I do want to tell you about a remarkable thing that happened in the City of Chicago within the last two days, something that never has occurred before in this country since it was founded. Congress adjourned to meet the gentlemen of a Western city, and they were well taken care of. I had the honor to be on the reception committee, and I want to tell you a little in regard to what is being done on that 610 acres of ground that in 1893 will show the nations of the world the grandest production that has ever been seen, eclipsing anything that has ever happened. Of course, these Congressional visitors were well taken care of by the City of Chicago. They were the hosts, and these people were carried all through those grounds in what they called observation cars. They were dirt cars with canvas nicely put over them so as to make them look clean. They were backed here and there all the way through on the railroad tracks that had been placed in there to get material together. The Woman's building is complete, virtually. The other buildings are getting along magnificently, too. The main building is a most astonishing thing; covers over thirty acres of land. Some people there thought that the roof could never be put on, but Mr. Burnham, the chief of construction, remarked that it was only a question of money. I was glad to see that the Illinois State building was going up well to its second story. Now, when I think

that the last time I saw that piece of ground it was a morass, and sand dunes, and then think of what it is to-day and what it is going to be complete next October I can scarcely believe that it could have been done. We want money from Congress, it is a national affair, and the people of the United States have invited the nations of the world to come, and they must not be brought here to see anything incomplete. The States have nearly all made appropriations, Illinois, of course, leading off with \$800,000, and all the way from that down to forty and fifty thousand. It is impossible for us to say what will happen in the next twenty years when we think of the tremendous strides in the last ten years, but it will probably be many, many years before such another opportunity will reach the people of this country.

I had intended to say something to you about air. The last talk I had the honor of making before this association was on the subject of water, not any more wonderful than that of air, of which we know so little, though we live at the bottom of a great ocean. Almost nothing does the average man and woman know, except that we breathe it, and that when in motion we call it wind. Air contains oxygen, nitrogen and carbonic acid in the proportions of oxygen, 20.96 per cent., nitrogen, 79 per cent., carbonic acid .04 per cent., and these elements must be kept about in this proportion in order that air may be fit for respiration; a comparatively slight addition of carbonic acid renders the air not capable of healthy respiration. Vapor is also a constant constituent of water. Nature takes care of this element and provides a sufficient quantity of oxygen to keep it in normal condition. Those portions of the atmosphere lying above any point upon

which we may stand are pressed upon by all other portions above it, the pressure is in direct ratio to the height of an object, being constantly diminished with the height. The impurities contained in the organic matter found at low altitudes are inimical to health, and the organic matter is found to increase according to the density of the population. The air most free from impurities is that found near the sea coast and at considerable heights. The weather has a marked influence upon the health of civilized man, and mortality shows a large increase above the average at those seasons of the year when the conditions of the atmosphere are not normal. There is generally an increase of mortality during the cold season and a decrease during the hot weather. We know very little of the laws governing the perturbations of the atmosphere in great storms, cyclones and hurricanes, but the genius of thoughtful minds is fast evolving that which will be of great value to man. There is no class of men who have greater chances for reflection than the farmer. It will be restful for him during his leisure hours to carry on careful reflection in his mind which will help in many of the operations of the farm.

Music by the band.

The committee appointed to consider the president's address made the following report, "Your committee on the president's address make the following report:

"We recommend that a committee be appointed on State legislation, whose duty it shall be to attend the legislature when in session, and use their best efforts to accomplish the objects set forth in the president's address.

"We also recommend the appointment of a commit-

tee on dairy exhibits including the working dairy at the World's Columbian Exposition; to formulate plans for making a creditable exhibit at said Exposition and to lay the same before the State Board of World's Fair commissioners, and ask for the necessary funds for carrying out the work; and that said committee be instructed to urge the payment of a liberal sum of money, out of the \$40,000 appropriated to encourage a live stock exhibit, to each and every cow sent to the Columbian Dairy School from the State of Illinois."

MR. BOYD: Mr. President, I wish to say a word or two about these resolutions. It was my misfortune to be obliged to do some work in connection with the dairy exhibit of the World's Fair, and I think the time has arrived now when we ought to have some understanding from the State Board of Agriculture as to what we are to expect from them. We all know that our legislature has made a very liberal appropriation for the purpose of having the interests of this State properly represented in 1893. Eight hundred thousand dollars has been appropriated for that purpose. Out of this sum \$40,000 has been set aside for the live stock department. Now, I understand, not authoritatively, that the State Board of Agriculture do not consider the dairy cows sent to the Dairy School as coming under this head, or, in other words, they do not consider them live stock. Now, that is a very peculiar construction. These cattle are sent from different States regardless of their breed to be exhibited at the expense of the exhibitor for six months. During that entire six months the product of these cows goes to the World's Fair, and the Exposition pays the expense, so that the individual exhibitor gets nothing whatever from the

Exposition. The World's Columbian Exposition offer no cash premiums for these cows, they offer nothing but medals; whatever premiums are offered must come from the several States that are represented in this exhibit, and I hope Illinois will be represented there as well as New York.

I understand also that it is not the intention of the State Board of Agriculture to offer any premiums in this department at all. At one time the papers claimed that they would appropriate \$20,000 for our dairy exhibit. Now I understand they go back on that, and do not propose to offer anything. Now, what did New York do? She appropriated \$300,000, of which \$25,000 goes to pay the expenses of the dairy exhibit. You can determine how much Illinois ought to appropriate out of \$800,000, if the dairy interests of New York were so great as to call for an appropriation of \$25,000 out of \$300,000. I hope that this committee will be instructed by this convention to put this thing before our State Board of Agriculture in its very plainest terms, so there will be no misunderstanding as to where we stand after this. I perhaps speak strongly on this subject, but I do it because I have been all through this whole business. I went before the executive committee of the State Board of Agriculture at the request of Mr. Reed, who was one of the members of the board at that time. I went very hesitatingly I must say, and I represented our interests there to the best of my ability. The papers came out shortly after that stating that the State Board had concluded to set aside \$20,000 for the purpose of seeing that Illinois was properly represented in her dairy interests. Now, I understand on the best authority, coming from outside of the board, that they have gone back on that and don't propose to do it.

If this exhibit is made at all, it must be made in either one of two ways, it must be made by the individual at his own expense, without any kind of return, except the honor there is in it, or it must be made by the State Board of Agriculture, coming from the State, purchasing the butter and cheese, and sending up there on their own hook. I hope before this convention adjourns that decided action will be taken on this matter.

Mr. Willson moved that the resolutions be adopted and motion seconded.

MR. WILLSON: Before the question is put I want to make some remarks that may help Bro. Boyd in understanding the question a little more definitely. I am heartily in favor of the resolutions and a strong committee appointed to present them before our State Board. I met the chairman of the committee of the World's Fair Commission of the State of Illinois, and he said to me that he was very anxious that this meeting should take some such action as is proposed. I am in favor of having a committee appointed to ask for all that we can possibly hope to get and more

MR. MONRAD: We have been asked several times to meet the State Board of Agriculture, and we have been kept up with talk and promises, and still they have done nothing for the dairying. I should like to see this thing discussed when we have more time.

MR. W. R. HOSTETTER: I think the dairymen make a great mistake as a rule in presenting this matter before the State Board in not making them fully understand the importance of it. We think of the wheat interest as being a great interest in this country, but it is nothing as compared with the dairy interest. I think it is generally assumed that the wheat interest is greater,

but Prof. Henry stated the other day that the average value of the butter eaten in this country is nearly twice as much as that of the bread. The market price of wheat in Chicago is known all over the civilized world. Illinois butter, or Elgin butter, as it is called, is quoted and known all over the United States and governs the price, and the dairy products of this State can not be put behind. We must be the leading State in this matter, and we must go before the State Board of Agriculture and show them just what we want and why we want it and why it is for the interests of the State for them to do more for the dairy interest than any other interest in the State.

MR. WILLSON: The chairman that I spoke of said that their meeting would be held, I think, the first week in April, and our plans should be brought forward before them at that meeting.

THE CHAIRMAN: It is already late and we will postpone the further discussion of this question till to-morrow.

Question put to the house and carried.

Mr. Dexter moved appointment of the committee mentioned in the report. Motion seconded and carried.

Music, Male Quartette.

Reading, William Curtis, Kewanee.

The president appointed the following named gentlemen as the committee on nominations: A. B. Hostetter, D. C. Woolverton, H. B. Gurler.

Committee on Membership: Frank Good, M. W. Tibbetts, Webb Wedge, Warren Lester and Captain Murchison.

Committee on Resolutions: Prof. Farrington, Mrs. Frank Good, Hon. Jonathan Periam.

Committee on Implements: Mr. Moses, J. S. Seeley and Mr. Bowen.

Music by the band.

The Convention adjourned to meet at 9:30 the next day.

Convention met at 9:30 A. M., February 27th.

ABORTION AMONG COWS.

DR. L. C. POWELL, V. S., KEWANEE.

Abortion or slinking is an affection peculiar to cows. Causes, first, feeding upon slop or other milk secreting malarials. Second, insufficient feed of whatever description. Third, the attempted reproduction of the species, whilst at the same time a drain is being made upon the system by an excessive and unnatural demand for milk. Fourth, irritation of the white membranes of the wind-pipe, changing and weakening the blood. Fifth, debilitating disease of any kind. Any of the above named causes, singly or combined, when acting upon an animal placed at so great a disadvantage as is here shown, will necessarily result in outraged nature, choosing her great prerogative between life and death and the perfect propagation of her progeny.

PREVENTION.

First, keeping cows from being too much exposed in bad weather, feeding substantial feed and *enough of it*, but not excessively sloppy or wet, for in this way the bowels are kept too loose, relaxing the solids of the body, and thereby inducing oversecretion of milk at the expense of good health. Second, though the cow be unprofitable, allow some feed, gradually increasing

it in quality, and, if necessary, in quantity, as she approaches the time of calving; by this means the extra demand of nature in the increasing size and wants of the calf will be supplied without at all affecting the health or strength of the mother—thus insuring a natural parturition. Third, dry up milk in all cows that do not in the natural order of things stop secreting milk, say three months before their time of calving, by giving sulphate of iron three drachms combined with half ounce of gentian root (each finely powdered) once daily, mix in feed for one week, no milking should be done other than to prevent injury to the udder if it becomes distended. Fourth, mix one ounce of pure carbolic acid with one pound of lard and smear with a paint-brush over an after-birth that is adhered. Keep your sick cows away from your healthy ones, particularly those that have lost their calves by abortion.

DISCUSSION.

MR. BOYD: I wish the Doctor were here that we might ask him some questions instead of simply having his paper read. For my part I do not agree with his opinions; my experience has been different. He recommends drying up a cow three months before she calves. I do not agree with that in the first place. Of course no man can tell all the causes of this disease, but we do know one thing for certain, that it is very contagious; that if one cow is affected with it the chances are that there will be more in the same herd, and if we escape it we escape it by very great precautions, just as we can only escape an epidemic of cholera by very great precautions. The remedies suggested by Dr. Powell are not the remedies that I have employed. I presume they are good, but they are not what I use. I use a vaginal in-

jection with every cow that calves on my premises simply as a preventive, which is one part bichloride of mercury and 4,000 parts of water, and I use a gallon of that injection at a time. I wash the vulva and the tail and all the parts very carefully, and disinfect the barn all over, and wherever the cow has happened to drop her calf with sulphuric acid one part in one hundred. My theory of the disease is that it is a germ that passes from one cow to the other, in what way nobody has yet been able to understand, nor how that germ is developed; but that it is developed we know. If you have a case of that kind the best thing to do is to immediately take the cow away from all the others and keep her separate. I have never had more than one case at a time in my herd, although I am milking thirty-six cows; and since I have adopted this course I have had very little trouble. I have also fed phosphate of lime by mixing one part phosphate of lime and six parts salt, and giving them a tablespoonful every day of the mixture. I prefer the phosphate of lime to ground bone, because it is purer and it costs very little more.

MR. LLOYD: Do you feed that right along during the whole season, or only just as they come near calving?

MR. BOYD: Sometimes I feed it the whole season; it is a good milk food.

MR. LLOYD: Do you think that feeding oil meal tends to bring on abortion?

MR. BOYD: No, sir, I do not.

MR. GURLER: I think that it is true that if you give a cow an overdose of most anything it might produce a tendency that way, but I do not think that oil meal has any special tendency in that direction. In my opinion of the two cottonseed meal would be more dangerous,

yet I feed cottonseed meal all the time, summer and winter, when I can get it and I feed oil meal summer and winter when I can get it.

MR. GRAY: Do you know of anything which, fed in moderation, will produce abortion?

MR. GURLER: No, I do not of my own knowledge. I presume, of course, that ergot will, but I don't know myself.

MR. LLOYD: For a thousand-pound cow, what would you call a moderate feed of oil meal?

MR. BOYD: My cows average about eight hundred pounds. I feed two pounds of cottonseed meal and one pound of oil meal a day to the cows that are in full flow. I don't feed so much as that in the summer.

THE CHAIRMAN: Mr. Boyd, what do you say as to the cause of this disease?

MR. BOYD: There are probably a hundred different causes and I doubt if any live man can tell all the causes. We must understand there are a great many different kinds. There is an abortion that is not infectious at all, where a cow may have an accident, she may take an overdraught of very cold ice water; another cow may hook her or many other things might happen that would produce abortion, which would not be contagious. At the same time it is not safe to have other cows around at that time. It is not advisable even to have a cow calve in the same barn with the other cows. There is a sympathy from one cow to another that we men do not have for each other. You know animals are more sensitive in some respects than we are. They are far more sensitive in their sense of smell than we are.

MR. GRAHAM: I believe Prof. Stewart advances the idea that feeding oil meal is conducive to abortion, but

I cannot agree with him, because I have followed the practice of feeding oil meal a great many years and always feed it to a cow some time before calving. I think it helps her along in many respects.

MR. BOYD: I was very much surprised when I read that report from Prof. Stewart. It was the weakest thing I ever heard him express.

MR. GURLER: The first case of abortion that I ever had was from a cow getting to a stack of flax straw. She got in at the tail of the machine and ate all she wanted to, of the chaff. I very naturally presumed, after that, that an excess of flaxseed would produce it; but then, as Mr. Boyd says, I believe an excess of any other kind of feed might have done the same thing.

MR. HEAPS: There is probably no question that we have to deal with, in handling stock—especially, in breeding stock—that gives as much trouble as abortion, or sterility, which is in most cases the same thing.

THE CHAIRMAN: We want to know, first, the cause of it, and then the remedy.

MR. HEAPS: Well, sir, the person that can tell you that will be a Galileo. It is supposed that it is caused by microbes. You may have one experience and it may not recur, but very often others will have it in your herd. In that case, it is what is called epizootic abortion. Scientists claim that it is caused by a germ or microbe that affects a ligament and produces general action on the generative organs, and abortion is the result. The general history of the disease is, as Mr. Boyd says, you will have one case, and in a very short time, without any notice or premonition at all, you will have another, and so it will spread from one to the other. Its effect is very peculiar, the animal will evidently not be anticipating it, it

will occur and the animal go right on feeding. It don't appear to produce any sickness for any length of time. Now, it occurs the most frequently about the fourth month, although it will occur all the way through. If it is true that it is caused by a germ, we must admit that it is contagious, and Mr. Boyd's suggestions are entirely correct. The remedy is by quarantine, don't let any other animal come anywhere near and thoroughly disinfect, clean out all the straw and bedding and whitewash the stalls. You must keep it under, or it will make you lots of trouble. One very serious question about this thing is, that after the foetus has passed away these germs will remain and how long they will remain is something we don't know, but undoubtedly quite a time. There should be a course of treatment that will effectually kill all germs that may be remaining. I do not know of a better plan for disinfecting the animal than by selecting a little keg or can, holding probably two gallons, attaching a rubber tube to it three or four yards long, a half inch tube, and hang it above the cow, insert that into the vagina of the cow, have this water about as warm as you can hold your hand in it. About the best infectant you can use in that way, as a thorough preventive, is one ounce of borax to a gallon of water. You must insert your tube and thoroughly wash out the vagina and the uterus. As you may see by this rough drawing that I have made, it will be necessary to be careful and reach the folds and sacs where this foetid matter will become lodged, that will be perfectly alive with these microbes. You should go through this operation at least a half or a dozen times before allowing the animal to breed again. That same operation will often prevent what is generally considered to

be sterility in a cow. The egg is deposited and drops into this receptacle and passes down and comes into contact with this foetid matter, and it kills the germ, and shortly after a virtual abortion takes place, and so a great many valuable animals have been considered sterile when there were well developed germs, healthy and strong, but they have been killed in this way, and pass off. This wash that I speak of is one ounce of borax to a gallon of water, and it should be continued for some time. You understand I am speaking of recurrent abortion where the same trouble recurs about the same time.

MR. BOYD: What would you do to prevent that?

MR. HEAPS: I don't know. The only thing that I know of is, when you have the time located, to keep the cow very quiet in the stable, where it is dark and no other cattle to bother her, and in that case you can probably tide over the trouble once, and then you are comparatively safe.

MR. BOYD: Fluid extract of black haw, if given in time, will prevent it.

MR. HEAPS: It works as an astringent. Tell us what quantities.

MR. BOYD: About two tablespoonfuls at a dose, in a drench. Give it when you discover the first symptoms.

MR. A. B. HOSTETTER: Are our experiment stations taking any active measures in investigating this matter?

PROF. FARRINGTON: I have always been of the opinion that men can be of the most value by devoting themselves to one particular thing. This is a subject I never have done anything in. My time is devoted entirely to other matters.

MR. A. B. HOSTETTER: This is a very important question to the dairymen. Our experiment stations

have large amounts of money appropriated to them, and I should like to see this matter taken up by them and a thoroughly scientific explanation given. We have been talking this matter at a good many dairy meetings, and do not seem to be making much progress in the solution of it.

THE CHAIRMAN : Put it into the form of a resolution and give it to the Committee on Resolutions.

STATE BOARD OF AGRICULTURE.

THE CHAIRMAN: We will now take up the discussion that was interrupted last night in reference to the appointment of a committee suggested by the committee on the president's address.

With the consent of the association, I will invite the gentlemen present who come as a committee from the State Board of Agriculture, Mr. Wyman, of Sycamore, and Mr. Dysart, of Dixon, to state the situation from their standpoint.

MR. WYMAN: I judge from the talk that I heard last night that some of these gentlemen did not have very much of an understanding of the situation, so far as the dairy interests are concerned, at the World's Fair. There are two or three phases to this question, one in regard to the dairy exhibit to be made in the Illinois building. As you well know, there is a national department, where they expect to have a large dairy exhibit of the dairy industry of the United States. We also have a State building, where we expect, or want to have, an exhibit of the dairy industries of the State of Illinois. From the resolutions that were introduced here last night, I judge that the opinion seems to prevail in the Dairymen's Association that there had been a division of the money that was appropriated by the State of Illinois, already made, and there had not been any appropriation made to the dairy interests of this State. Such is not the fact. The situation is pretty nearly like this: The money was appropriated for a State exhibit. It is not a competitive exhibit, it is an

exhibit to show the resources and industries of the State of Illinois. There were committees appointed for all the different departments to supervise the different departments and the exhibits to be made. There is a committee on agriculture and dairying. Those are comprised under one committee, and we have, as a board, considered all these questions from all the information we could get from all the different departments. We have had members of the Dairymen's Association at our meetings, we have consulted with your president and some of your members as to the nature of the exhibit they wanted to make and the cost of the exhibit, and, of course, the committee wanted to make every exhibit they could, and they wanted to get as much money as they could. I live in the Elgin dairy district. It is one of the leading industries and one of the main branches of agriculture that is carried on in this State, and I felt especially interested and I was anxious to have an appropriation made that would be large enough so that a creditable exhibit could be made of the dairy industry in the State building, and we asked for an appropriation of enough of the money which was appropriated by the State to cover the department of agriculture and also dairying. We succeeded in getting \$40,000 set apart for agriculture and dairying, and there is where the matter stands to-day. Now, I think the State Board is favorable to giving just as much of that amount as they can to the dairy industry, and we want to be in better condition to know what this dairy association suggests before we decide that matter. There is another question. The National Commission do not propose to allow any manufactured goods to be shown in any of the State Buildings. Now butter and cheese are manufactured

products and it is a question whether we will be allowed to make an exhibit of that kind; we have not had any definite answer on that point. If that can not be done the exhibit that is to be made will have to be made in the National Building, and in that case this State Board of World's Fair Commissioners are not authorized to appropriate money from that \$800,000 to exhibit in that building. Now, so far as the Working Dairy is concerned, I understand that is an independent organization of dairymen throughout the United States that propose to have a working dairy there. Now, we have had a meeting of this live stock committee, we have discussed that question thoroughly in committee.

When the legislature met last winter there was a great pressure brought to bear by the live stock industries of this State to have a specific amount set aside by that industry for the State of Illinois, and \$40,000 was set aside. Now, we know of no way in which we could use that. The National Commission would not allow us to make a classification, they would not allow us to make an exhibit of the State, and we didn't know how we should use that money. We decided that a certain per cent. should go to the horse industry, a certain per cent. to the cattle, a certain per cent. to the sheep and a certain per cent. to the poultry; but whether we would have a right to apportion a part of this money to pay premiums on the cattle that were entered from this State in the National Dairy Show was a serious question. There were three out of five of the committee that were in favor of that. There were two or three short-horn men that thought if that was done there ought to be an apportionment made to the Fat Stock Show. The matter stands that way. The money is appropriated, 33 per cent. to the cattle, and

it will remain for some future meeting to decide how that money shall be apportioned, or whether there shall be any set apart for the Dairy Show. I think the people of the northern part of the State would much prefer to have that money paid out to the cattle entered in the Columbian Dairy Exhibit than to the cattle exhibited in the National Show. I don't think the beef industry is very strong in the northern part of the State, while the dairy industry is very strong; but there are people in other parts of the State who think that it ought to be apportioned and paid out to the representatives of all the different breeds rather than to go to the dairy cattle. I think perhaps a large majority of the people would be in favor of having it go to the dairy interest.

MR. BOYD: Isn't it a fact, Mr. Wyman, that the World's Columbian Exposition will not submit to your making a dairy display in the Illinois State Building?

MR. WYMAN: We have asked them that question, but they haven't refused yet.

MR. BOYD: They have refused to my knowledge to other States. Now, in case they do insist upon this refusal, then, as I understand it, we are out in the cold, for you can not make, according to your own statement, an exhibit anywhere else, and can not assist us in making an exhibit. That seems to me to be a very curious construction of this law, and eminently unfair. It is very plain to us that if we are going to get anything out of this at all, we have got to go for it now, before it is too late. Even if you were allowed to make an exhibit in the State Building, how are you going to get that exhibit? You say you can pay no premiums to competitive exhibits.

MR. WYMAN: It will be a very easy matter, because

money will buy almost anything, Mr. Boyd. I suppose that we could buy butter that would score just as well as if it was entered in a competitive show.

THE CHAIRMAN: Do you think that the State Board are willing to appropriate a dollar for that purpose?

MR. WYMAN: Yes, I do.

THE CHAIRMAN: How much in your judgment?

MR. WYMAN: I don't know how much. There is one thing you want to remember, we have got a building that is going to cost \$300,000. There has got to be an administration that is going to cost a great deal more, and this is a large State, there are a great many industries to be represented, even in the agricultural line there are many different departments.

MR. MONRAD: I would like to ask a question as a matter of historical interest to the dairymen of Illinois. Did not the State Board of Agriculture in a great measure have the formulating of the bill appropriating the \$800,000?

MR. WYMAN: That bill had already been drafted before I came onto the Board. I should presume that one or two members of the State Board in connection with the officers of several other State departments drafted the bill, and I think the Attorney-General and the Governor had something to do with it.

MR. MONRAD: I consider that the State Board of Agriculture has proved false to the trust for which it was elected, as far as the dairy department is concerned. It has been suggested that possibly \$10,000 might be devoted to this purpose. Now, Mr. President, it seems to me an absurdity to propose to devote \$10,000 to show the resources of Illinois as regards its dairy interests. This industry is more important than any other in the State and ought to have at least \$50,000 out of the \$800,000 that has been appropriated.

MR. WYMAN: Perhaps, if you understood the situation thoroughly, your opinion might be modified in regard to that matter.

MR. MONRAD: I have been pleased to hear that Mr. Dysart acknowledges that he has got his eyes opened considerably on the importance of dairy work. You see here is an industry and the interest is so scattered they can't join together like the manufacturers of machinery or the mining interest, and it is a case where the State is bound to help them.

MR. WYMAN: The legislature has seemed to have full control of this matter from the start. It set apart \$80,000 for the women, also \$40,000 for the live stock; there is \$120,000 over which we have no control; then the World's Fair directors refuse to allow us to put up the building that we calculated putting up, and it takes lots of money. We are trying to divide this matter up between the committees, and arrange it so as to make a creditable exhibition to every department, and we think we have given due consideration to every department. The apportionment committee figured very carefully and reported to the board, and they decided that they could give the agricultural and dairying departments, of this State \$30,000. I thought we ought to have \$50,000, but after hearing all the reports and discussions I became satisfied that under all the circumstances we were getting a fair apportionment. I consulted with Mr. Johnson and Mr. Gurler as to the amount in outline by which we thought we could make an exhibit in the State Building. We thought then that if we got ten thousand dollars we could make a first-class exhibit of the dairy products of this State.

We haven't got the money nor the room to expend any

\$40,000, except the products could be sold and help pay the expenses. I do not understand, and I do not believe a member of the State Board does understand that we have any right to apportion any part of that \$800,000 to make an exhibit in the National Building ; our hands are tied on that point. It is possible we might take the authority of doing that, but we could not use the \$800,000 if we did. If we appropriated any money for that purpose, we would have to take the money that is in the hands of the State Board, as a State Board, and not as World's Fair commissioners. We have studied this matter very thoroughly. I know the representatives of nearly every association of this State, have been disappointed, they have not got what they expected for their different departments. I know it is so in the Horticultural Society and in the Geological department and the State Board of Charities, some of them thought it would take \$150,000 to make a proper exhibit of the charitable institutions of this State. You said last night you wanted to ask the State Board for all the money that you could get and more, too. Now, if we can not possibly give it to you, you ought not to censure us. We must, as far as we possibly can, make a creditable exhibition of every department in the State of Illinois.

MR. BOYD: It seems to me that if you gentlemen are obliged to put this construction on the law, and it is against your good judgment, it is a very simple thing to go to the legislature and ask their construction of it. I am very certain that our legislature never intended that it should be confined in that way ; it is not common sense to appropriate \$800,000 and then not allow you to make an exhibit of the most important industry in the State. See what other States are doing.

Illinois has made one of the largest appropriations in the United States. New York has appropriated \$300,000, of which \$25,000 is laid aside in the interest of the dairy industry. Now, that is competitive and we must compete with other States. Wisconsin is getting up a competitive exhibition, and she is going to pay every dollar of the expense. They are sending commissioners around to all the meetings, instructing them what to do in order to become competitive exhibitors. I don't see the force of the statement as to the dairy cattle. Remember this working school is simply a scheme to disseminate knowledge. Every man who sends a cow there sends it at his own expense, or the expense of the association he belongs to. He gets no return whatever from that animal. He does not even send it there in the hope of getting a cash premium on her if she is successful. He gives her entire product to the World's Columbian Exposition during the entire six months. Now, I would like to know why that man is not entitled to his pro rata of that \$40,000, as well as a man who sends a cow there to exhibit her in a general live stock department for one month. We have nothing to say against offering premiums for fat stock, all we ask is that our interest should be attended to, as well as other people's.

MR. WYMAN: It is contemplated by the State Board of Agriculture to make an exhibit of the agricultural resources of this State at the State Fair. We have offered prizes and have got out a circular. They are offered through the State Board, not through the National Commission. That is to be in the National Building. This is a matter that is done entirely by the State Board. Our circular states that the property offered at the State Fair, and all the samples shown, will be-

come the property of the Illinois State Board of Agriculture at the close of the State Fair, which will give us a starting point.

MR. BOYD: How does that cover the butter and cheese?

MR. WYMAN: That will come further on. There isn't any class in this circular that covers them. We can't get butter and cheese next year at the fair and keep them until the Exposition, they will come later on. You understand these prizes that are offered are offered by the State Board of Agriculture.

THE CHAIRMAN: About what are their resources?

MR. WYMAN: About six thousand dollars.

MR. SAWYER: Have you six thousand more ready to put out for the dairymen?

MR. WYMAN: I don't know about that. There are only a few districts in the Northern part of the State that are interested in this dairy business.

MR. DYSART (Being called on, said): It is not necessary for me to state further. Mr. Wyman has stated it just exactly as it is. We are as much interested as any member here on this subject, but five or six are not a majority of twenty, consequently we can not just exactly have everything our way; but if you had attended our meetings, you would find that we who are interested in dairying have made just as strong a fight for the dairy interest as any of you would have done, and we hope that we shall secure as much for that interest perhaps as any other single industry in the State. I do not hope to secure as much as the real magnitude of the interest seems to demand, but we will get the best we can for you. We have been through a good deal in this matter. We have been chastised before our eyes and behind our backs, but we are going on

gentlemen, to do the best we can. There don't seem to be a definite understanding of the distinction that should be drawn between the Illinois Board of World's Fair Commissioners and the Illinois State Board of Agriculture. By the law of the legislature they are the same individual men and that is all. If you read that law, you will see that it says this commission shall erect a suitable building, and in that building this exhibition must be made. We have had the advice of one of the best lawyers of the State of Illinois as to how this money shall be used, and we are informed that we can not use a dollar for any exhibit outside of the building, except this \$40,000 set apart by the legislature, which is to be divided among the interests of live stock. I don't see why that can not be applied to dairy cattle, but I have heard the objection that it is claimed that they have no right to any portion of that as breeders of live stock. The dairy cow is a manufacturer, simply, she is not interested in breeding live stock, but I am of the opinion that it would not be straining the law very much to give the dairy cow a portion. We can't tell yet how it will be. According to the construction of the Attorney-General, every dollar that we pay out must be shown in the Illinois State Building. We can't tell you anything definite, because we don't know; we have asked the question three months ago: "Will we be allowed to put anything in our building in the shape of manufactured butter or dairy machinery, or anything of that kind?" But we have no answer, directly or indirectly. We can not promise anything until we know. You must remember that instead of our building costing us about \$150,000, as we expected, it will cost \$300,000; \$120,000 has been taken by the special appropriation, the State Board of Charities

want a big appropriation, you want forty or fifty thousand dollars, everybody else wants lots of it, and we have only \$320,000 for the whole thing. We are trying to save a part of it, by issuing the circular that Mr. Wyman has spoken of and forming a nucleus towards an exhibit without taking any of this money. We will virtually take six thousand dollars out of the treasury of the State Board, which would otherwise come out of the \$30,000 appropriated to the World's Fair. Let me advise you, don't talk to us, appoint your committee and come before us with your matters in shape to tell us what you want. The State Board of Education came before us asking for \$60,000, and we told them to get their figures in shape to formulate a list, and when they got down to it they found they couldn't figure out but half the amount of money they were asking for. Now, then, tell us just what you want and what it will cost, and what you are going to do with it. This commission is held responsible by the State of Illinois as to how this money is spent, and we would not be acting in good faith with the legislature if we allowed this money to go out without knowing what it is to be spent for. Let your committee come before the board, giving us figures of just exactly what the dairymen want and rest assured, gentlemen, you will get every dollar that we can give you. The State Board of Agriculture is making preparations for a grand exhibit in Agricultural Hall. We have twenty or twenty-five thousand dollars in our treasury; we don't know how much we will be able to do for the dairy there, but we will probably, if they will allow us, give you good help in that shape, but we don't want you to get the idea that we are overlooking the dairy for anything else.

On motion of Mr. Willson, the president was authorized to appoint the committee spoken of.

Motion seconded and carried.

The following resolution was offered by Mr. Willson :

Resolved, That the Illinois State Dairymen Association request the Elgin Board of Trade to appoint a committee to consult with a committee from this association regarding the exhibit of dairy products at the World's Columbian Exposition under the direction of the World's Fair commissioners of Illinois.

Motion seconded by Mr. Monrad ; put to the house and carried.

THAT MILK PUMP.

MR. J. H. MONRAD, CHICAGO, ILL.

That milk pump seems to be a very small subject and I shall not take a long time to speak about it. You all know, if you have visited any creameries, the way in which the milk is lifted up. It is generally done by some sort of a pump. Now, I have been in creameries in Illinois, in Iowa and in several other States, creameries that were kept perfectly clean, where the floor was so that you could take your meal off from it, and yet if you would smell that milk pump you would find there would be some little smell in the cleanest pump of them all. It is not impossible to keep a pump clean, but in nine cases out of ten they don't succeed in doing it, and that pump will be the breeding point for the wrong kind of bacteria. They put in these pumps because they can build a cheaper factory by using them to get the milk up, and the buttermakers like the

pump because it is easier, they get that pump to run by machinery, and it saves them trouble. Now, what we ought to have instead of this pump business would be apparatus to lift that milk right from the start so that we can run it by gravity through the whole course of manufacturing. Now, this can not be done properly by the old-fashioned hoisting apparatus where the boys have to hoist up a heavy weight nine or ten feet. I want to ask the inventors of dairy machinery why they don't construct some quick way of elevating that milk, to take it up ten or twelve feet, then it can run all the rest of the way in open gutters that can be kept clean. Milk pumps and rubber hose are things that we ought to use as little of as possible in our creameries; it is a small record, but I want to go on record as being deady opposed to the milk pump.

DISCUSSION.

THE CHAIRMAN: What is the matter with using the jet pump?

MR. MONRAD: That is all right for elevating the skim-milk, but I don't think it is nice for the milk. While I am about it I want to kick against your underground buttermilk tank. Do run your buttermilk into a tank that can be cleaned every day; if you do not, it is bound to stink in summer, and some day the commissionman will find you out.

MR. GURLER: We have just laid aside a new jet pump that we have been using for pumping the skim-milk, for the simple reason that it would carry over from one day to the next, and gets in a condition that the patrons don't want it. I have no use for a jet pump any where in a creamery, and I don't think it is a bit cleaner than the other kind. I am ready to put aside

all pumps as soon as some man will bring out something better. I can tell you there are very few men who look closely enough after a pump to keep out the microbes. I also want to corroborate what Bro. Monrad says about the underground skim-milk and butter-milk tank. That odor around the factory may contaminate your milk, and, another thing, if a patron can take his skim-milk clean and sweet from the factory it is worth double to him what it would be after it goes through one of those stinking things underground.

MR. MONRAD: If you must use a jet pump, if you will scald it at 160° , it will help to keep it sweet, provided it is in a fair condition, if it is done right from the separator, and heated up to 150° or 160° . I believe the time will come when we will not only heat it up, but we will send it right up over a cooler, and cool it down again so it will keep sweet two or three days.

MR. GURLER: We find that if we heat it up to 150° immediately from the separator, it will keep sweet as long as necessary. We are heating with the exhaust steam from the engine, and it is costing us nothing.

THE CHAIRMAN: Don't you think, Mr. Gurler, that what you have said about this pump business is what we boys used to say was straining at a gnat and swallowing a sawmill?

MR. GURLER: No, sir, I believe what I say. We can put in other pumps, for instance the Powell pump. It will get the milk up in a way that the patrons are satisfied to take it.

MR. FELVER: How much does it add to the value of the milk to heat it?

THE CHAIRMAN: The only idea of heating it is to keep it sweet longer; the actual heating don't add any value.

MR. FELVER: How much better is it sweet than sour?

MR. MONRAD: A great deal of the feeding value in skim-milk, and especially in whey, is simply the sugar. When it turns acid, that sugar value is simply destroyed, and you lose that much.

MR. GRAHAM: I think it is owing a great deal to what you feed it, whether it is sweet or sour; if you feed it to calves you want it sweet, if you feed it to pigs I want it sour.

MR. GURLER: If it is just sour enough to form a curd, it is all right for hogs, but where it is run underground and runs from day to day, you get a germ planted in that milk that destroys half the value of it. I have fed skim-milk for years, and if I don't know a little about that I don't know anything about anything.

MR. FELVER: We run our sweet skim-milk into a tank by itself, and those that want sweet milk can take it and those that want sour milk can take it out of the other tank.

MR. GURLER: I want to say this, if the vessels that our buttermilk and skim-milk go into are cleaned out and scalded every day, that is all right, but where we hold over the ferment we get an element in that does destroy in a degree the value of the skim-milk.

MR. GURLER: We got sick of the underground milk tank a few years ago. We built a new building, and we have a tank in there that sets up, and we have a platform that we can set the cans on and draw this sour milk or sweet milk out, and that is on a level with the wagon so that we can load two teams at the same time. In order to get that milk in there, we run an ordinary rotary pump, No. 1, that takes all the milk from three separators, lifts it up, and runs into the gable end of this building; we have a small tank there that holds

five or six barrels, and we run the sweet milk in there. When that tank gets full it overflows into the larger one, so that those who want sweet milk direct from the separator can draw it from this one vat. Many of our patrons take sour milk in preference to sweet, they have got in that habit. We sell it at a low price and get rid of it nearly every day, and if it accumulates we drain it out. We have no jet pump, or anything of that kind to get our milk up. We drive up to unload from the wagon, and the platform is about as high as the wagon; we set the milk on there and it is weighed and run right into this vat, and that floor is elevated, and the next floor where the separator stands is down lower, so it runs down itself.

MR. KING: I would like to ask some of the members what their opinion is in the value of sweet and sour milk to feed to calves?

PROF. FARRINGTON: That is a subject which I hope some time to have an opportunity to make some experiments on. Of course, it is a fact that in the decomposition of the milk there is a destruction of solid matter, and in that way there must be a loss of feeding value in very sour milk over sweet, because something has necessarily to be destroyed; but whether calves will do better on sweet than on sour milk, or equally as well, I do not know of any demonstration controlled by actual figures that have been made.

The committee on nominations made the following report:

"Your Committee to nominate officers for the ensuing year beg leave to report the following names:

President Lovejoy Johnson, Stillman Valley; Directors: John Boyd, Elmhurst; E. E. Garfield, La Fox

Ralph Allen, Delavan; George Reed, Herbert; R. R. Murphy, Garden Plain; J. E. Miller, Bellville.

Signed, { A. B. HOSTETTER,
D. C. WOLVERTON,
H. B. GURLER."

On motion the report was adopted.

On motion of Mr. Willson, the secretary was instructed to cast the vote of the association for the officers named in the report, and according to those instructions the vote was so cast and the officers declared elected.

PRESIDENT JOHNSON: Gentlemen, I was just thinking of a nice little speech to make, I can only say that I thank you for this continued mark of your approval of my conduct during the past year. Every year when I come down here to these meetings, I come with the intention of getting out of it entirely, but it is so sweet and so nice that when the time comes I haven't the moral courage to back out of it. I thank you again and will try to do my best as president of the association.

The Convention adjourned to meet at 1:30 P. M.

The Convention met at 1:30 P. M., the president in the chair.

Mr. Ralph Allen was by the president put on the committee on resolutions in place of Mr. Periam, in the absence of the latter gentleman.

ENSILAGE.

JAMES GRAHAM, STILLMAN VALLEY, ILL.

If the cow could speak, her voice would be heard all over this country asking for an improved breed or more thoroughbred dairymen.

Her small returns have been speaking to a great

many dairymen for years, but they are still as deaf as ever, and in these times when competition is great and every one is trying to produce in their special line as cheaply as possible, all dairymen and farmers should be alive to their own interests to see how they can produce milk, butter and beef at the least cost for food consumed.

There are still many doubters as to the value of ensilage, but their doubts would disappear if they were better acquainted with it and the result from feeding it. Ensilage is usually made of green corn fodder, but it may be made of any green fodder that cattle will eat.

Horses, cattle and sheep will eat and relish it with very few exceptions.

A silo is only a preserving can on a large scale, and the same conditions prevail in both. They must be air tight. This is the fourth season that I have put up and fed ensilage, and to say that I am well satisfied with it but faintly expresses it.

There is no other cattle food that I am acquainted with that can be compared to it in cheapness, and in the result from feeding it.

A good many of our scientific men would not endorse ensilage for a long time, because in their analysis of it they could not get out of it what the cow could.

Science is a good thing, but the cow is ahead of science in this case.

It seems like stating it pretty strong to say that you get more out of the silo than you put into it. But that is an actual fact. It is more digestible. Therefore it will give better results in feeding than the same food will when fed in a green state.

I will give a little experience I had a year ago

last June. We were milking 16 cows. The cows were on good pasture and we were feeding them one bushel of ensilage per day, as we always feed something with pasture. When the ensilage was all fed out we went to cutting green clover for them and the result was that in three days their milk yield was decreased one hundred pounds per day, and in six days one hundred and fifty per day, and up to the time we stopped feeding ensilage they showed no signs of shrinking in their milk, which proved to me that ensilage was an excellent food, even in summer and in winter. I can not say enough in its favor. Some people say that roots will answer the same purpose, but I can not agree with them, as I have had experience with both.

I have grown sugar beets more or less for the past eighteen years, and I find that the labor required to grow the corn and fill the silo can not be compared to the expense and labor of growing a crop of roots, and the result from feeding is altogether in favor of the ensilage.

I have grown some beets this past season and have been feeding them to the cows previous to opening the silo. October was favorable for the production of milk, the weather was fine and the cows fresh, and I was feeding them shocked corn, 1 pint of oil meal and from four to six quarts of middlings with the beets and what clover hay they would eat. Since opening the silo, we have fed no hay, have cut down the other grain, with the exception of oil meal, of which we have added one pint, and the cows have gained in their milk from two to three pounds each per day. You would naturally suppose that there was corn in the ensilage, but that is not the case. It is the large ensilage corn, drilled at the rate of nearly one peck to the acre.

Now you will no doubt conclude that the milk is very thin. I was afraid, myself, that it would not test as well as on the other feed, so I kept a close watch on the test, and was agreeably surprised that it tested even better, and, what was more, our butter-maker asked how long I had been feeding ensilage, and I told him. "Well," he said, "previous to that time I could not get any flavor to the butter, but now it has a fine flavor." I of course told him that it was the ensilage that gave it the flavor.

Beets are a good and healthy food for stock in winter, but they do not take the place of hay. They are excellent to feed if you are feeding heavy with shocked corn or other rich food, they will counteract the heating qualities of the corn; but ensilage will do the same, and largely take the place of hay, and, when you take into consideration the quantity that can be grown per acre, fifteen to forty tons—I will put it at twenty, as I can grow that amount on every acre of my farm—it does not pay to grow more hay than is necessary for a rotation of crops. The best crop of hay will rarely exceed three tons per acre, and the average crop is one and a half tons or less. Now when you consider the feeding value of each, one ton of hay to three of ensilage, you will readily see the balance is largely in favor of the ensilage; besides, it is very difficult to cure a heavy crop of hay unless the weather is very favorable.

There is another thing which ought to be taken into account, and that is the amount of storage room required for each; it will take five hundred cubic feet for one ton of hay, and only one hundred and fifty for three tons of ensilage; neither do you need an expensive barn, but a good comfortable stable, as ensilage can not

be fed profitably outside in winter, and if you want to carry your young stock through the winter without grain, you can do it very much better with ensilage than with hay.

Now some people claim that ensilage will not make good milk or butter, but that is a mistake, as good sweet ensilage will make as good milk and butter as can be made on other feed.

Complaints have been made, we will admit, but if a thorough investigation was made it doubtless would show, if nothing else was wrong in the management of the dairy, that the ensilage was moldy, sour or half rotten, from which good milk or butter could no more be expected than from moldy hay or decayed roots.

Now, I want to say to the dairyman that is trying to compete with bogus butter, without ensilage he is a long way behind, and the man who is raising beef in competition with the western ranges will find himself in the same boat, if he has not a good silo, well filled. As to the variety of corn to fill the silo with, I prefer the B. & W. or Southern corn, and will give my reasons for using that variety. In the first place, it takes not quite half the number of acres to fill the silo, and in the second place it keeps a great deal better in the silo, and after your silo is filled you have a great deal more feed in it than you would have if you filled with the common field variety, because it packs much closer and the stalk is much sweeter with more leaves on it, and another thing in its favor, it does not dry up as rapidly in the hot dry weather, and I am satisfied that better results can be obtained by adding the grain in the natural state than by putting it through the silo, as you are aware that ensilage is not a perfect food alone, but only as it is fed in connection with other feed can

the best results be obtained. My experience is, that it is best to grow the large variety and enrich it with oil meal and middlings or ground feed.

In building a silo, if a large one, it is advisable to divide it into three compartments of equal size so that they may be filled alternately, giving it time to heat; you will get a better quality of ensilage if you do not fill too fast, you will also get more into it, as it settles quite a good deal after heating. There is another advantage in having the silo divided into separate compartments; in feeding it out, you can feed from the top of each compartment, and there is less waste than by cutting it in sections from top to bottom.

When you build your silo, try and plant your corn as convenient to it as possible, as it is a great saving of time, when filling it. The corn for filling the silo should not be planted on a sandy or gravelly subsoil, it will dry up too much before you will get it into the silo.

In filling the silo, great care should be taken in packing the corners and sides. It will pay to keep a man in the silo all the time for that purpose while filling.

There is one thing I would impress upon your minds if you are intending to build a silo, get your lumber in time to let it season; if the lumber is green, when it shrinks it will tear the paper and then your walls will not be air-tight, select lumber that is free from sap, as sappy lumber decays rapidly in the silo. The walls of the silo must be built strong, as the lateral pressure is great. The round form of silo is good, as there are no corners to contend with, I have had no experience with it.

In building silo, do not use matched lumber outside of the tarred paper, for in driving it together you will be liable to break or tear the paper. If matched

lumber is used for the first boarding, all right, but for second boarding, shiplap or any narrow lumber dressed one side is best.

In getting the corn ready for the silo, I have not seen any machine that can successfully cut the large ensilage corn. A good corn cutter can cut twenty-five or thirty loads per day, and lay it butts all one way in small gavels, that can be lifted readily by the man that loads.

We use low truck wagons with flat hayracks floored over. Those who are not accustomed to the silo, think it a big job to fill one, but in no other way can as much feed be secured so cheaply. The present season we filled ours in seven and one-half days, the help we had was three men and a little boy between nine and ten years old, and myself.

Our silo holds 180 tons, we filled it from eleven acres of ensilage corn; that quantity of ensilage will feed 30 cows between five and six months with very little hay or other fodder, and those cows will look as sleek the latter part of March as cows that are fed on dry feed will in June or July, and will keep up a better flow of milk than can be obtained in any other way.

The silo should not be opened to feed from for two months after being filled.

Cattle will do better by feeding just what they will eat up clean. If any remains in the manger it will sour, and they will not eat as much or do as well.

Now to sum up the advantages of ensilage: 1st. You can get more than double the quantity of better food per acre. 2nd. You can double your stock and keep them in better condition. 3rd. You can get a larger flow of milk of a better quality at a greatly re-

duced price, and you can make a better quality of beef on half the grain that is usually fed to beef cattle.

And those who are turning their attention to the large mutton breeds of sheep will find it hard to keep up the standard of their flocks without a succulent food, for they have been brought to their present high state of perfection largely by the use of roots, and in no way can a succulent food be obtained as easy as through the silo.

Now, in conclusion, I would advise those who are thinking of building a silo, to visit some first-class dairyman that has one, and be convinced of its value as I was.

DISCUSSION.

MR. SEELEY: Do I understand your corn did not have ears on?

MR. GRAHAM: No, there was no corn on it this year as the weather was very dry; I have put in ensilage corn twice that had ears on and in each case when it had corn on my cows haven't done as well as when it did not have any. They ate it up cleaner and ate more of it. If there is corn in it, they will muss it all over to pick the corn out, they don't get at it and eat it right up.

MR. SEELEY: I filled a silo three years, and I find out from all the information that I can get that it is best to have ears and have them in a nearly mature condition.

MR. GRAHAM: I know that is the prevailing idea. It looks as though the corn would make the ensilage richer, but if you will try the two varieties, you will find there is a great difference between the stalk of the ensilage corn and the common field corn, if you have ensilage corn growing twelve feet high, the cattle will eat it all up clean.

MR. SEELEY: This year part of my corn filled well, and the balance of it was a little dry at the bottom and it was quite hard. I find that my cows pick out the corn with the ears on, and they are doing finely.

MR. GRAHAM: There is no trouble in their eating the corn in your ensilage. The trouble is they will pick it out and leave some of the rest, while if there is no corn, they will eat it all up clean. Ensilage is not a perfect feed, and I think it is better to add the other feed separately.

QUESTION. Then I gather from what you say that the benefit you get from your ensilage depends very much upon the condition of it and the addition of the other feed.

MR. GRAHAM: Yes, the best results are from feeding in connection with the other feed, and you get so much per acre of the large variety that it don't pay to bother with the other, and it dries up so quick in the fall, that it is hard to get it into the silo in good shape. The Southern corn will stand frosts better and stand droughts better.

MR. HUMPHREY. What stage of maturity is it best to cut?

MR. GRAHAM: There is a great deal of this corn that won't germinate at all. It comes from the South and there is no care taken in collecting it, and it don't do to plant as quickly as our variety that we take great care in collecting and planting when the ground warms up a little. I let it stand as long as I can and not get caught by the frost.

PROF. FARRINGTON: What stage of maturity was your corn that had no ears on when you cut it for ensilage, wasn't it before the ears had begun to grow?

MR. GRAHAM: Oh, no, there were some ears that had

started, but the weather was so very dry and warm that it stopped the growth of the ears altogether, and I don't believe that there was a dozen ears started in the whole lot that we put in.

PROF. FARRINGTON: Should you say the corn stalk had matured?

MR. GRAHAM: Well, I think it had, the stalks were green, perfectly green.

PROF. FARRINGTON: I don't know but you would get the same beneficial value from this greener ensilage that you do from grass in pastures compared with hay. I know when corn is young it is richer, and the feeding value is greater, but you have not so much per acre, and I did not know but possibly it was the stage of maturity of the corn that increased the feeding value.

MR. GRAHAM: No, we filled earlier this year on account of the dry weather, than we usually do, and I think probably it was about the same stage as it would be in the same season where there was more moisture.

MR. HEAPS: Have you had any experience putting clover in the silo and what was the result?

MR. GRAHAM: I haven't had any experience. I have understood that it made the best kind of ensilage, but it is too expensive, because they don't get enough per acre.

MR. HEAPS: If it will pay to raise it for hay and save it, why will it be more expensive to put it into the silo?

MR. GRAHAM: I would rather have what I raise made into hay and feed it in connection with corn ensilage. I don't think it pays to raise as a forage crop.

QUESTION: Did you feed any more corn with that ensilage without ears?

MR. GRAHAM: No, I didn't feed as rich feed as I did last year and the cows have produced more milk.

THE CHAIRMAN: I have lived where I could have one eye on Mr. Graham, and I noticed that last year middlings were very high, and this year he got his middlings in early, and he has fed more this year of middlings and less ensilage.

MR. GRAHAM: No, I have fed more ensilage this year than ever before.

MR. GURLER: I have had several years experience with ensilage, and I commenced with planting a portion of it, three bags to the acre. Last year I only planted ten quarts to the acre, some of the ensilage and some field corn. I planted the field corn in order to have something that would cure early; two varieties of common field corn, and the ensilage. The idea was to have it ripen along to pretty near the same stage of maturity to put it into the silo, which you can't do if you plant all one variety, some will be too early and some too late. According to my experience I want more corn than Mr. Graham does with my ensilage. I had some corn that didn't produce any ears that grew on poor ground and I had some that grew on rich ground, and there was quite an amount of corn in it, we have husked about fifty or sixty bushels of corn to the acre. Now, when I changed, in working down a compartment of my silo, from one kind to the other, I found a change in the milk. About ten days ago we opened a new pit in the silo, and we came first upon this corn that has practically no ears on it. We had been feeding out of the bottom of another pit where we had ensilage with quite a large amount of corn, and my cows dropped off a hundred pounds of milk, the sixty-five cows.

THE CHAIRMAN: Might there not be a dozen reasons for that?

MR. GURLER: We have had that record every time we have changed; we are on the fourth pit, and we have had that experience with each one of them. Our divisions were filled exactly the same.

MR. GRAHAM: I have noticed that cows always shrink, no matter what the change is when you change the feed, even if it is better feed, sometimes, a very little will make a difference, especially in a large herd.

MR. GURLER: Mr. Oatman at Dundee, took the same position that Mr. Graham does, he told me he preferred to grow all the fodder he could on the corn, and buy his ground feed. I prefer to get the corn in the ensilage myself and save the husking and shelling and grinding. I don't think it ought to get to the point of maturity that has been spoken of here. It ought to be green.

THE CHAIRMAN: Do you consider a corn ration as good as any other for milk?

MR. GURLER: I do not advocate corn. I want to get what corn feed I want my cows to have in the ensilage. Then I will supplement it with some other nutritious feed.

MR. GRAHAM: I think that in the cured corn you are apt to have too much corn in your ensilage.

MR. GURLER: I believe that you can plant eight or ten quarts of seed to the acre and you won't get any more corn feed in the ensilage than is advisable for the cows to have.

THE CHAIRMAN: Is the corn in the silo any better ration for milk than it is out of the silo? Is the character of the corn changed by putting it in the silo?

MR. GURLER: O, I don't think the character of the corn is changed. I don't think the corn that comes

out of the silo will make any more milk than it would if it was fed to the cows green in the condition it goes in. You all know that up to a certain point in feeding green corn there is no loss, but as soon as the corn begins to get hard, there begins to be a loss.

THE CHAIRMAN: I do not think there is any danger of getting too much Southern corn, but if you put up our common corn, you will get a great deal too much in your ration.

MR. GURLER: If you don't plant more than eight or ten quarts of B. & W. corn to the acre, and in a climate where it matures, you will get just as much corn as you can field corn. Of course, down here in Central Illinois you can grow a different kind of corn than if you lived in Wisconsin. I would plant a corn that was adapted to my climate so I would get the proper degree of maturity.

MR. BOYD: Corn fed out of the silo in December, cut in September; is it worth any more because it has passed through the silo than it would be if it had been cut in September, and shocked and carried in and cut as we used to do it, and fed in December?

MR. GURLER: That is a pretty big question. I will tell you all I know and that ain't but little. I have fed lots of shell corn myself, but I never have got down to facts and figures that would warrant me in getting up and making an assertion. My experience is that I have a much less loss of fodder when it is put into the silo than I had in any other way of securing it. My theory is that if you cut and shock corn the same time as you put it into the silo, and cure it perfectly, so there is no haste in maturing, the difference in the feeding value would be very small, but I don't know of any practical way of curing it. I have fed

shocked corn in the field a good many years, and there is a big loss to me. It takes a wonderful sight of room, and the only way that I could ever preserve it at all securely, aside from shocking, was to stack it up in ricks.

MR. BOYD: I want to find out whether there is any virtue in the silo.

MR. GURLER: That is the turning point; there is the great advantage, and another advantage is the palatability of it, and I am satisfied my cows like the ensilage better than they do the dry fodder, and the probability is that if you have not feed that is palatable, the stock won't eat enough to pay. The more feed they have that they can handle, the more profit there is in the process.

MR. BOYD: My experience is exactly the reverse of Mr. Gurler's. For three years I planted B. & W. corn and I put it into the silo, and I put it in at all stages, and I raised a big lot of it to the acre.

THE CHAIRMAN: How much?

MR. BOYD: I won't tell how much, because perhaps you wouldn't believe it. I have blundered in this business and I have profited by the blunders, I think. I never got absolutely satisfactory ensilage from the B. & W. corn. It did not keep as well as I wanted it to keep. It didn't have corn enough on the stalks. I am now planting what we call "Leaming" corn for the silo. I raised as much corn to the acre as I did of the B. & W. It is a Dent corn, a large, yellow Dent, not the Yankee corn, and I raise just as much to the acre, ton for ton, as I did of the B. & W.

THE CHAIRMAN: How much was that?

MR. BOYD: I raised a good twenty tons. I raised as much as thirty tons, but I averaged twenty.

QUESTION: How did you plant it?

MR. BOYD: A kernel every four inches in drills, and then I planted the other corn every eight inches, and again every twelve inches, tried it every way. I would rather have a ton and a half of the Leaming corn than two of the B. & W. in feeding. I don't want this watery corn in my silo, it doesn't keep as well and has not as much feeding value.

MR. GRAHAM: John Gould, of Ohio, is one of our best authorities in dairying, and he has always stuck to the B. & W. corn, and I see in his report this year that all the dairymen in his section have gone back to that after trying the other variety. I was up in Wisconsin last fall and saw some silos filled with the field variety, and I asked as to its keeping qualities, and they said it molded quite a good deal, but that the cattle ate it all the same. In my own silo I would come to chunks as big as a half bushel that were moldy and stuck together, and I never had any such experience with ensilage corn. The field variety, if it is left exposed a day or two, will mold a good deal. Last year there was a great demand for the B. & W. corn seed.

MR. GURLER: We must remember one thing, and that is the amount of surface exposed in the silo must correspond to the amount of stuff you feed. My rule is six square feet of surface to each cow, or mature animal, that I am feeding. In that way with care in feeding, the surface can be kept uniform and you will feed down fast enough so you will have no trouble.

MR. MACMILLAN: I think Mr. Gurler said he could find no machine that satisfied him in cutting his crop. I have had no experience in cutting ensilage, but I cut my corn and run it through a cutter, and I have used a sled, which is manufactured with a knife on each

side, which two men work satisfactorily. That kind of a harvester has been used a good deal with us. Two men will cut and shock five to six acres a day with us with one of those sleds, and they will lay in gavels to be hauled away and there will be no difficulty in two men cutting eight acres a day. I would rather cut three acres of corn with one of these corn harvesters and put it in the shock than to cut one acre the old way.

MR. BOYD: I have used the same implement that Mr. MacMillan speaks of, and I couldn't get along without it at all. It cuts two rows at a time with one horse.

MR. GURLER: There is a machine made by D. F. Osborne & Co., of Auburn, New York. I met Prof. Roberts at Oshkosh lately and had some talk with him about this machine. He is the father of it, really, it is his idea. That machine cuts one row at a time, and lifts it right onto a wagon driven alongside of it. Prof. Roberts told me they had put a ton in three minutes on to the wagon. You see, the wagon and this machine run side by side. Prof. Roberts said that a year ago last fall they cut sixty-five acres on their farm there and had no trouble at all. Last fall I went and bought an old second-hand Champion self-raking reaper. I took it to the blacksmith shop and had a foot and a half cut off the outside of the rake, and we went along in the field just as fast as a team could walk, and it worked first-rate. A strong wind the same way you were going would make a little trouble, but the only trouble we had was that the stalks, some of them, tangled into this mechanism that carried the rake, but by the driver watching and catching them out we got along without any serious difficulty at all.

MR. GRAHAM: How tall was your corn?

MR. GURLER: I don't know; it was as high as most anybody's last summer. I should say ten to twelve feet high. I have had the B. & W. corn sixteen feet high, but not last year.

MR. GRAHAM: We built a machine last summer and went into the field and tried it, and couldn't do anything with it; our corn was twelve feet high.

MR. BOYD: It won't cut in very woody corn.

MR. MACMILLAN: In regard to the drill corn, I will say this, there are a number of those corn harvesters used in our country, and there was some difficulty, as Mr. Graham speaks of, but it was always with green hands that did not understand the exact workings of the machine. I have worked on that kind of a thing for two years past, myself, and I never saw corn so thick that I couldn't take it off until I had my arm full. It doesn't make any difference to me at all how thick the corn may stand in the drill. After a little practice it cuts no figure at all.

QUESTION: Do you claim that you add anything to the feeding value by putting it into the silo, anything that was not in the corn before you put it there?

MR. GURLER: I don't claim that you do.

MR. GRAHAM: I claim that it is more digestible; therefore it don't take as much exercise on the part of the cow to assimilate it, and it will give better returns than it will for you to feed that green corn right in a new state.

MR. SPICER: I haven't got it through my head yet whether we really gain anything by putting our corn into the silo. It has been a question in my mind whether I have made anything in putting up corn that way that I wouldn't have made by putting it in the crib. I know the cattle are doing well.

MR. GRAHAM: The objection I have to the field corn is that it takes so much land to fill your silo, and that counts on a small farm.

MR. SPICER: I filled my silo from about twelve acres, about 200 tons, and I think it is very satisfactory.

THE CHAIRMAN: Prof. Farrington, tell us whether there is any difference more than the water between ensilage and dry corn.

PROF. FARRINGTON: I would not assume to make any statement in regard to the comparative value of corn ensilage and corn shocked when such men as Mr. Gurler and Mr. Boyd have had so much longer experience in that work, and know a great deal more about it than I do.

MR. KING: Have any of the gentlemen present had any experience in raising rye for ensilage?

MR. HEAPS: I never had any experience, but it appears to me it would be a very dangerous feed to grow, dangerous to feed to a breeding cow. I want to say that I think Prof. Henry claims there is just as much nutrition in corn fodder as in ensilage.

THE CHAIRMAN: If I remember right there were a good many gentlemen present at the time who did not believe it.

MR. SAWYER: I think it is Dr. Laws, of England, who estimates that three tons of ensilage contain about one-half the digestible matter contained in one ton of timothy hay, what the chemist would say was there, and what the animal ought to take out, but any man that has had any experience with ensilage will say, "I will take the three tons of ensilage in preference to the one ton of hay every time," and he sizes it up this way, that, notwithstanding the ton of hay has

more in it, that the fact that the ton must be brought into condition to be assimilated by the animal is true, and in that process one-half of it is consumed in getting the other half ready to assimilate. With the ensilage it is in the very best possible condition to be assimilated into the system of the animal. Hence, if there is just as much in the ensilage as in the corn fodder, no more in one than in the other, the ensilage is by far of the greater value, for the reason that it is in condition to be digested by the animal with the least possible cost of energy.

A MEMBER: Then I apprehend that the chief value of ensilage is that it puts the food in condition that the animal can use it and digest it to so much better advantage than it can dry fodder, that there is the great advantage in using it.

MR. GRAHAM: That is one of the advantages, and another very great advantage is the handiness, the readiness with which you can feed a number of animals. We can feed thirty cows in thirty minutes, with ensilage, and I would like to see the man that can go out into the field, when his shock of corn is frozen down, and cut enough shocked corn to feed thirty cows in thirty minutes.

A MEMBER: But you don't take into account the cost of putting it into the silo in the thirty minutes.

MR. GRAHAM: We can put a great deal more than that in in thirty minutes; we can put a ton in in just twelve minutes. Of course we all know that there is a great deal of waste, too, in your stack.

A MEMBER: How much do you feed to a cow to make a good ration, and how much hay and grain do you feed with it?

MR. GRAHAM: We feed two scoopfuls twice a day,

in the neighborhood of forty pounds. We have fed no hay till last week. We feed one shock of corn to eighteen head of cattle, and three quarts of middlings twice a day, and a pound of oil meal twice a day. The shock of corn is very light.

MR. GURLER: I am feeding an estimate of forty-five pounds of ensilage, four pounds of wheat shorts and four pounds of grano-gluten on hay.

CARE AND FEED OF YOUNG STOCK.

RALPH ALLÈN, DELAVAN, ILL.

As this is a dairy meeting, I presume that it is understood that I should confine this paper to the young stock that relate to the dairy, that is, to such calves that are designed for cows for use in the dairy. The vitality or thrift of the calf may be more or less affected before its birth by means of the feed and care of the dam. The habit of milking the dam close up to the time of calving tends to make the calves smaller at birth, though I am unable to say if the size at birth when due to this cause effects injuriously the ultimate usefulness of the calf, though, relatively speaking, the larger and more robust calves at birth make the more robust cows.

The feed of the dam has an influence on the calf. It is well known among sheep men that wintering ewes on corn is death to the lambs, neither does corn and straw make strong colts. The kinds of feed best suited to produce vigorous offspring is much the same as will make the best flow of milk. That is, a cow, to produce

a strong calf, should be fed and cared for much the same as she should be to support a strong calf. The origin of that fatal disease known as scours in calves may be found in the practice of high feeding of the dam for a considerable time before the birth of the calf.

It is a matter of considerable economy to raise calves on skim-milk. To do this the calf should be taken from its dam and taught to drink milk. The milk used should be that of the dam freshly drawn. The calf should be fed twice a day and the new milk ration continued until the calf is about a month old or as soon as it will eat hay and corn, at which time the new milk may be gradually displaced by skim-milk; this may be done by giving skim-milk at every other feed or by diluting the new milk. The skim-milk should be fed warmed to about 90 degrees Fah. The calf should have all the hay it wants and also all the corn it will eat until it will eat about two quarts per day, which with three or four gallons of milk and plenty of hay is sufficient to keep the calf growing nicely until it is eight or nine months old, when the supply of milk may be gradually diminished in amount until it is finally dispensed with.

The first winter the calves will thrive well on clover hay, sheaf oats and shelled corn. The next summer they will do well on good pasture without grain; and with plenty of good hay or corn fodder they will need very little grain the second winter.

For several months previous to calving the heifers should be prefaced for the work of milk giving; they ought to be fed grain and such feeds as are given the cows in milk for several months before calving. If possible they should be so fed or trained to eat that they may be capable of consuming a full feed by the time they

come into milk, otherwise, though they may be in good condition on pasture or light feed at the time of calving, the heifers will be unable to digest a rich grain food sufficient to keep them in that condition which enables them to produce the best flow of milk.

It is a common practice among breeders of dairy cattle to allow the heifers to produce their first calves at about two years old. The effect of this on the cow is to almost entirely stop her growth for from four to six months. But when the flow of milk decreases the heifer will commence growing again, and if liberally fed her growth at this time will be so rapid that at the end of the year the heifer will be about as large as though she had not produced a calf. With the second calf the heifer's growth will be again retarded and most frequently again resumed, attaining her full size just before her third calf is born.

In case the heifers have their first calves at three years old, they stop growing when the calf is born the same as in the case of the two-year-old heifers, but this check in their growth seems to be so close to the age when the heifer should become matured, that their growth is frequently permanently checked; my general experience being in this matter that those heifers that have their first calves at two years old grow a longer time and make larger cows than those that have their first calves at three years old.

A cow's education is a matter of no small importance in regard to her usefulness, and should be commenced in early calthood. The first lesson to be taught is confidence, or not to be afraid. A calf that is taught to be tame or allowed to become timid, never forgets its early lesson and will carry through its life these early impressions.

When the heifer comes into milk her natural instinct is to yield her milk only to her calf. Her education at that time consists in teaching her to yield her milk to the herdsman. The main principle to guide the herdsman in training the young cow to be milked is that the relationship which should exist between the cow and the milker ought to be similar to the relationship that exists between the cow and the calf. The milker should transpose to himself the affections or feelings that the cow naturally has for her calf.

Fear, pain and unnatural excitement should be avoided. The calf never intimidates nor causes fear, neither should the milker. The cow does not yield her milk to the calf during times of excitement and she will not at such times yield her milk to the milker. The calf naturally draws the milk painlessly, and so should the milker. By observing this principle the herdsman can most always wean the calf from the cow without in the least suppressing any of the cow's maternal instinct and at the same time transfer these instincts in their full vigor to himself. When successful, the cow will bestow on him many of the manifestations of affection that she would bestow on her calf.

By gaining these affections and by bestowing on her the other essentials of good care and feed the herdsman will develop to their fullest extent those qualities most essential in a good milch cow.

DISCUSSION.

MR. GURLER: Do you think it necessary that a calf should have new milk until it is four weeks old?

MR. ALLEN: I have had the best results by following that practice. By that time they can digest corn and hay.

MR. GURLER: I have raised a great many calves on separator skim-milk and I have good results, and I put them on the skim-milk when they were only a week old.

MR. GURLER: Do you consider corn the best ration to give them at first?

MR. ALLEN: I think it is. I give the whole corn. Skim-milk is deficient in carbo-hydrates, and the corn supplies the place of it better than anything else we can give.

MR. GURLER: It is also a fact I think that a calf will digest more corn and better than a larger animal, a mature animal.

MR. ALLEN: Yes, young calves always digest their corn, they chew it the same as a sheep does. I think that the rumen is not developed and the digestion begins in the mouth.

MR. GRAHAM: Corn is a good feed for calves, but I find that I can raise them cheaper with ensilage and a little middlings and some oil meal added to their milk in a pudding, than in any other way, and have a better calf. I never fed a calf longer than a week with full milk, and I have raised a great many very good calves that have sold from fifteen to nineteen dollars a head, at from four to six months old.

THE CHAIRMAN: I am feeding this winter the same rations and never had calves do better.

MR. GURLER: I think Mr. Allen's suggestion as to having the milk warm, is a vital one, and cannot be emphasized too strongly.

MR. ALLEN: That is a fact. I always use a thermometer in my practice, and have the temperature exactly the same when I feed it, about ninety degrees. In very cold weather, I should warm it a little warmer.

Cold milk will produce indigestion if the calves will drink it at all, and a great many won't touch it.

MR. LLOYD: One point Mr. Allen spoke of struck me. Our heifers ought to be so brought up that they don't have to be broken, that we can sit down to them when we want to take milk for the first time without being knocked down ourselves. When my boys are raising the heifers, when they are feeding them, they go through the same operation as though they were milking them, and when they come to be cows there is no trouble about it.

MR. HUNGERFORD: I have had a little experience in breaking heifers, and I will say three of them were genuine pets, such as Mr. Lloyd speaks of, and they were the meanest things that I ever tried in my life, milked the worst.

MR. ALLEN: I have often heard that idea advanced, but I think it is an incorrect one. As far as I have observed, a heifer objects to any such doings as that. There is a time when she wants to be milked, and that time is when she has the milk in her udder to give, and before that they almost always resist any handling of that kind. I have never seen any good come from it.

THE CHAIRMAN: I think the great trouble in raising calves on skim-milk is that people do not exercise care enough in feeding; they are very liable to give an overdose, and it is just as bad to give a calf a pound more than it ought to have, than to give it a pound less, and a little overdose will do a great deal of damage. It doesn't matter so much what you give, as how you give it, is my experience.

THE PRACTICAL APPLICATION OF THE BABCOCK TEST.

H. B. GURLER, DE KALB, ILL.

I will talk to you a few minutes about the test plan in paying for milk at creameries and the test as applied to individual cows of the dairy. I will say first that we commenced the first of April, 1890, to pay at one of our creameries by the the test plan, paying for the actual butter produced in 100 pounds of milk. This was a new departure, and we were considerably interested and quite anxious in regard to the outcome of it, how it would satisfy the patrons, etc., and we watched it very closely for nine months at that creamery before introducing it at any of our other creameries. We have now five creameries paying on this oil test and it has given general satisfaction. We have had very few complaints, much less trouble in that way than we anticipated. We had expected that the patrons who were receiving more than the average would be satisfied, but we also expected that some of those that were below the average would be dissatisfied, and perhaps pull away and leave us. Well, we have had very little of that; the first creamery that we put the test into, we did not lose any patronage at all. The second creamery where we introduced it, we had sharp competition. Some of our neighbors thought it was an opportunity to get our business away from us, and they went to work on that line. Our competitor was going to start a wagon within half a mile of us and run a route right by our creamery. Well, it roused us considerably, and we went to work in our own defense and the result was that we only lost two patrons. They

went to an adjoining creamery and it made a disturbance there. The other patrons objected, and the result was that that creamery has put in the test and is paying by the test. I really believe now that if we should undertake to go back to the old plan, we would have more friction than we ever had in all our business experience in creameries. Our patrons are satisfied because they realize that every man is getting what belongs to him. What would you think if one of your stock dealers or your grain merchants should come along and say they would pay so much for hogs or steers or oats, regardless of the quality, put a fixed price on everything? Well, if it would be foolish for them to do so, why isn't it foolish for the creamery men, for I honestly believe that there is no one product that varies as much in value as milk does? The old plan of pooling educated us backwards. The inducement was to breed for a bigger flow of milk, regardless of the value of the milk.

Now, another important result of the introduction of the test is, we find our patrons are applying the test to their individual cows; and they are finding that a great percentage of their cows are making them nothing, and a great many are running them in debt. When they have learned that, they know what to do; they will, of course, weed out these unprofitable cows and replace with some that they know will be better, and so we are on the right road. It puts a new interest into the whole business. I never have been so much interested in my dairy as since we have got every cow standing on her own merit. I find a great many surprises. I find that one of the largest milkers in my dairy is also one of the richest milkers, which I certainly did not expect. Her milk tested 5 per cent. fat.

I believe that with five years of this kind of work, thorough work applied to a man's dairy with thorough intelligence, I have no doubt he can double the net profit of his dairy. If a man will apply this test to his cows in the average dairy throughout our country, he will weed out twenty-five per cent. and the other three-quarters will make him more money than the four quarters have been doing, with, of course, the decreased expense. I think I have underestimated rather than overestimated the facts in that statement.

It is not necessary to discuss the reliability of the test. That is a settled thing I think. Prof. Farrington of our own Experiment Station has done a large amount of work in that testing line, and he can tell us a good deal about the reliability of the Babcock test.

PROF. FARRINGTON: How many times have you tested that cow that tested five per cent?

MR. GURLER: We commenced in the fall and we followed it up through the winter several months. Of course I found a variation. I find that in most all of my cows the per cent. of fat is increased as the time advances from the time they are fresh.

MR. SAWYER: What percentage of increase?

MR. GURLER: They increased .3 to .5 of one per cent., as a rule.

MR. SAWYER: I remember seeing one case where the increase was from 6.2 to 7.8 at an interval of six months. That is clear beyond the normal condition of cows.

MR. GURLER: I will say the last time we tested the cows the range in percentage was from 3.1 to 6.4. Well, the cow giving 3.1 was nearly a fresh milker, and the other was a stripper pretty nearly dry. These facts want to be known in making comparisons; it is not fair

to compare a fresh cow with a stripper for quality of milk.

MR. KING : Does the method of feeding add anything to the increase of butter fat in the milk?

MR. GURLER: That is a big field, but I will express my opinion; I think you can affect the percentage of fat in the milk.

MR. SAWYER : How much?

MR. GURLER: You understand I am hiring my help on the farm, and I go there only occasionally, but when I was on the farm some twelve years ago, I did a good deal of experimenting in that line. I started out to establish some facts if I could.

THE CHAIRMAN: When the chemists all agree and such scientific men as Sawyer and the rest of these fellows, why do you still hang onto that idea of yours?

MR. GURLER: I tell you when it is the chemist against the cow I am going to stand by the cow.

MR. SAWYER: Do you feel satisfied that the tests you made ten or twelve years ago would satisfy you now?

MR. GURLER. No, I should go to work differently now; I would try to apply more advanced methods and implements to it, of course; but I was careful, and I believe accurate in my conclusions then.

MR. GRAHAM: I would like to ask if any of the gentlemen here have had experience changing from timothy hay to clover hay, and have noticed how it affected the milk?

MR. GURLER: I haven't had any experience in that line. I feed a mixture of clover and timothy, not much timothy. I don't think much of meadow, just enough to give me rotation, so I renew the land. I don't grow a crop of hay for profit, for I can feed cheaper in the shape of corn and put it into the silo,

MR. GRAHAM: I have changed several times from timothy to clover, and every time there was a large increase in the yield of cream. I cut my clover as early as I can, when it is in blossom.

MR. GURLER: My experience with clover is, if it does not grow so rank as to fall down, if it stands up and is cut in full blossom, it is the best milk producer of any dry feed I have ever fed; but if it grows so rank that it lodges, then it is taking damage, and the result won't be nearly so good.

MR. JOHNSON: There are fifty dairymen here to-day to find out whether the Babcock test is of any practical use to them.

MR. GURLER: I will tell what I have done^a in my dairy. I have nearly one hundred animals. Sixty-five that we were milking in the month of January, and they are so near alike that we can't tell them all without putting numbers in their ears. We give each cow a number and each number a page in a little book. Twice a month we weigh up the milk for the day, and that is recorded, and once a month we work out the test, and that is recorded, and when we get to the end of the year, we are going to tell pretty nearly what each cow has made, and the cow that doesn't come up to the standard, unless there is something in her condition that isn't right, why she has got to go to the butcher. We don't propose to keep cows in a dairy that don't make us a profit.

QUESTION: What do you call a satisfactory point in a cow, the standard, as you call it?

MR. GURLER: I don't want any cow in my dairy that won't make two hundred and twenty-five or two hundred and fifty pounds of butter a year.

QUESTION: What is your stock?

MR. GURLER: Mine are Grade Holsteins. Nearly all of them I raised when we were working for all the milk we could get.

QUESTION: How does their milk compare in butter fat with Jersey and other cows?

MR. GURLER: Last September and October my cows were all fresh, and I was among the very lowest in the percentages of fat that was coming to that creamery. My cows tested down as low as three and two-tenths (3.2). I don't know that there were any fresh dairies in the same condition as mine were, but I have been increasing until my test worked out this week was 3.9. That has been the increase, and I am up now a little above the average of the full number of cows coming to the creamery.

QUESTION. How has that been brought about?

MR. GURLER: That has been brought about mainly by the time that the cows have been milked. There will be no weeding out of those cows until along about the first of May. That is my time for marking. I find the only way I can unload cows without making a loss is to milk them and feed them heavily and get rid of them soon after they are dry, and we calculate to have them sold in the market along in the month of May or June.

MR. SAWYER: Is it necessary for the private dairyman to test his skim-milk or buttermilk, or anything of that kind?

MR. GURLER: It certainly is necessary and practical. Every dairyman should have one of these testing machines, unless he is where he can get his creamery or somebody else to make the test. Where you are making your own butter, you want to apply it to your skim-milk and buttermilk, and you will find some surprises when you do.

QUESTION: How much would you expect to churn from 100 pounds of milk that would test 4 per cent.?

MR. GURLER: It would make four and one-half pounds or a little more. Our experience is that as a rule we get in the winter months an average of fifteen per cent. overrun. In the summer months we get a little less than that, we have had as low as seven per cent., the increase of the churn over the test. We followed out the test right along, our skim-milk is tested and our buttermilk, regularly, so that we know right along what we are doing. If we find there is not seven per cent. of increase of the churn over the test, I should feel suspicious that there was inefficient work done, that there was a loss either in the skimming or in the churning.

MR. SAWYER: So you would not be surprised at not getting over seven per cent. in summer, and you would expect as high as fifteen in the winter, from seven to fifteen depending on the season.

MR. GURLER: Yes, that is putting it safe, I think.

QUESTION: In the absence of a creamery, would you advise a dairyman to use a separator?

MR. GURLER: Yes, I would. He ought to have a pretty good-sized dairy, and be pretty well fixed up, because with the deep, cold settings, if you have plenty of water or ice, you get pretty efficient work in that way, and there is less expense to it. I never have given that sufficient thought to draw the line for anybody. Everybody has his own conditions and surroundings. Dr. Babcock, of Madison, comes right out and recommends any one having fifteen cows to have a separator. I have never dared go as low as that, but I would say that if you have twenty-five good cows, and if you are fixed so as to run your hand separator with power, I should go ahead and buy one.

QUESTION: What is the cause of the difference in the test in buttermilk, the amount of fat left in?

MR. GURLER: I think it is very largely owing to the degree of acidity or ripeness of the cream. There may be a large loss of fat, from the cream becoming too sour. I have tested buttermilk that tested over 2 per cent. fat. If a man keeps down to .2 or .25 of one per cent. he is doing pretty good work. The vital point in churning is the proper condition of the cream. The maker, if he is an expert, watches that very carefully.

THE CHAIRMAN: You propose not only to weed out the poor cows, but the poor buttermakers.

MR. GURLER: Yes, our dairy schools are now making better ones.

QUESTION: Do you think the oil fat test will vary much from day to day under the same conditions?

MR. GURLER: No, but it's awful hard to get exactly the same conditions. There may be a change of temperature that will cause the cow to drink more water or she may be exposed to some bad storm. It is hard to get conditions. It is not practical always even to avoid the storms.

MR. SAWYER: Will the variation be greater from day to day than from week to week?

MR. GURLER: Yes it will; we find that by putting the weeks together, the variation is smaller. We can trust the variations in a weekly test, but the variations in a daily test, brought on by many different causes, are sometimes astonishing.

QUESTION: In this composite test, you take a sample each day in the week?

MR. GURLER: Yes. Our patrons are all numbered, and each patron's milk is put into a quart fruit jar, having his number on it. Every day we take a sample

consisting of a little over an ounce of that man's milk, while it is in the weigh can, and put it into that jar. When it is cold weather we sometimes run longer than a week—sometimes two weeks. When we make the test those samples of milk are sour, we add a small amount of concentrated Lewis' lye to ten ounces of milk, we add what will lie on a silver dime, and it neutralizes the thickness and brings the milk back into the same condition it was, nice for taking a sample. We want to be careful not to throw the lye in a bunch, it should be sprinkled in and then stirred. Don't add enough to make it pink, just enough to give it a good, rich color, and it is all right to do its work perfectly. Then the sample is taken from that and the test made.

MR. BOYD moved that the president be added to the committee appointed to meet the World's Fair Commissioners. Motion seconded by Mr. Gurler, put by Mr. Boyd, and carried.

The Convention adjourned to meet at 7:30 p. m.

The Convention met at 7:30 p. m.

Music by the band.

The list of awards were read by the secretary : they will be found on the last pages of this report.

ILLINOIS DAIRYING AT THE WORLD'S FAIR.

B. F. WYMAN, SYCAMORE, ILL., Vice-President State Board of Agriculture.

The opportunities afforded the dairy interests of the State of Illinois as well as all other states, at the Dairy Department of the World's Columbian Exposition will be, if rightly taken advantage of, the great opportunity

of a life-time. This industry, which has been considered a prosperous and growing one, is not making the progress and growth that its importance demands. The business is a very prominent one, especially in the northern part of the state, and must necessarily always remain so. The large cities must always look to the country adjacent for their supplies of dairy products, as a large part of them are too perishable to be carried great distances. It is also one of the main sources to which the farmers of Illinois must look for fertilizing material to maintain the richness and fertility of their lands.

In years past when butter making was carried on entirely on the farms, and almost entirely by the farmers' wives and daughters, very much good butter was made; that is, good butter according to the public taste at that time; but since the advent of the creamery, with its separators, cream ripening vats, improved churns, butter workers, etc., a more uniform and scientific method of making butter has been the result, and a higher standard of excellence in butter is demanded. The advance made in improved methods of manufacturing dairy products has been marvellous and has more than kept pace with the growth of the industry. Yet there are thousands of dairymen to-day in this state who are making butter and selling to country stores for 8 and 10 cents per pound less than choice butter is selling for in Chicago, and all for a lack of knowledge of dairy breeds of cows, of feeding the same and skill in manufacturing the products; that more than one-half of the cows of the State of Illinois are being kept at an actual loss, none who have studied the matter will deny. There is no question but that a reversal of the existing state of

affairs can be brought about by careful study and a little care on the part of those interested.

In the State of Illinois there were, in 1890, 738,584 cows, from which were sold 21,118,266 pounds of butter, at an average price of 22 cents per pound for the 15,478,110 pounds produced in the northern division of the state, 16 cents for the 4,245,573 pounds produced in the central division, and 17 cents for the 1,394,583 pounds produced in the southern division of the state, making an average of a fraction more than 20 cents per pound for the whole state, or \$5.80 per cow for butter. There was sold in the state 83,178,807 gallons of milk for \$11,919,486, an average of \$16 per cow. There was also sold 2,072,705 gallons of cream for \$1,039,452, an average of \$1.40 per cow. The 1,704,536 pounds cheese sold in the state amounted to \$205,669, or about an average of 27 cents per cow, making a total product per cow of butter, milk, cream and cheese of \$23.58. A calf, and sour milk, whey, and butter consumed would add somewhat to the above figures, but is there a man here who believes that there is a cent of profit in the average dairying as conducted in Illinois?

The Assessor's returns give the number of cows in Illinois for the year 1891 at 656,796 or 209,117 less than shown by the census of 1880, and 81,788 less than shown by the assessor's returns for the year 1890. The census of 1880 showed a butter product of 60,208,912 pounds. The assessor's returns of 1891 gave the butter product sold at 18,747,968 pounds, or more than 400,000,000 pounds less than in 1880. The milk production has increased from 45,000,000 gallons in 1880 to 91,000,000 in 1891, or the equivalent of about 13,000,000 pounds butter, while the cheese products have fallen from 5,000,000 to less than 3,000,000 pounds. The large

falling off in cows and dairy products in a state so well adapted to the business, argues very strongly that some serious cause obstructs its progress, and the efforts of every dairyman in the state should be given to determine what that cause may be.

Its interests are too great to lightly pass any danger that seriously threatens its prosperity.

Pure milk, pure butter and pure cheese are very essential elements of food for nearly every person in the land, from infancy to old age, and enter so largely into the living of every family that the purity of milk and its products should be preserved and jealously guarded, not only by dairymen, but by every consumer as well.

Milk, in its purity, is one of the most nutritious and healthful of all products, and the business of producing it ought to be prosperous enough so that it could be supplied in abundance and at a reasonable price to every person in the state. The adulterated and cheapening compounds of milk, butter and cheese that are put upon the market and sold as pure, not only imperil the health of the consumers of such stuff, but imperil the prosperity of the industry as well.

The United States census of 1880 showed that there were in the State of Illinois 865,913 cows, which, estimating their value at \$25 each, would amount to \$21,647,820. As it requires from three to five acres of land to maintain a cow, or an average of four acres, and computing the land at \$25 per acre, the investment in land to sustain 865,913 cows would amount to \$86,591,300; in barns, dairy utensils, etc., say \$25 per cow, or \$21,647,825, making a total of \$129,886,950.

And then we have taken no account of the amount invested in manufactories for manufacturing butter and cheese, butter and cheese packages, churns, butter

workers, cream and milk cans, jars, separators, engines, feed cutters and feed grinders, horse-powers, dairy salts and sacks for same, butter color and the numerous employments requiring invested capital, occasioned by the dairy interests. To raise grain and hay, milk and care for 865,913 cows, gathering milk and cream, hauling to factories and manufacturing into butter and cheese, hauling to market by teams and railroads, handling, selling and peddling milk in cities, thereby giving employment to thousands of people, makes it one of if not the first agricultural industry in the State.

Considering the enormous investment of capital in the business, the question naturally arises, whether the income is such as to make it a profitable one. According to the United States census of 1880, the production of butter in the State made by dairy process was 53,657,943 pounds, by factory process 2,414,658. The amount of cheese by dairy process was 1,035,069 pounds. Amount made by factories was 4,997,286 pounds. Made by combined butter and skim cheese factories, butter, 4,136,361 pounds, skim cheese, 15,240,839 pounds and condensed milk 3,645,408 pounds, or a total of 60,208-912 pounds butter and 21,273,183 pounds of cheese; besides there were produced and sold or sent to butter and cheese factories 45,410,719 pounds milk.

The total amount of butter produced amounted to 69 lbs. and a fraction per cow. The amount of cheese made, exclusive of skim-milk cheese, amounted to about seven pounds per cow. Estimating the total dairy product at an equivalent of 125 lbs. of butter per cow and butter at 16 cents per pound, we have \$20 as the average product per cow of the cows of Illinois for that year. Every dairyman present knows that a cow can not be kept a year, even in an ordinary condition, for

any such sum. And as a great many of the most progressive dairymen are getting a great deal more than that amount from their cows, it necessarily follows that many more must be getting much less. Thereby entailing a dead loss of money and time thrown away in taking care of them.

When we reflect that this poor showing is made from what are called common or general purpose cows the thought is forcibly suggested whether there could not be a decided improvement made by adopting special lines or branches in dairying, and breeding cows adapted to such special service. I am aware that the general impression is that a cow that will produce a moderate amount of milk from which can be made a fair amount of butter and cheese and will bring forth a medium calf every year, and at the winding up of her existence will yield a good carcass of old cow beef for the canners, must of necessity be more profitable than a special purpose cow that will bend all her energies in the production of a large amount of butter, cheese or milk. The New England Farmer says that the German farmers are discussing a question that seems very similar, namely, whether large or small breed cows are more profitable for milk purposes. Starting from the term of eight or ten years during which the keeping of a milk cow is remunerative, and comparing the relative cost of their feeding and difference of live weight when finally slaughtered for market, which of the two classes of cows will be on the whole the most profitable to keep assuming the yield of each to be equal? Take two cows whose live weight is 8 and 12 cwt. respectively, after utilizing their milking powers for eight or ten years, will the superiority in live weight of 400 pounds when handed

over to the butcher balance or surpass the greater cost of feed consumed by the heavier animal in ten years? The following is the German estimate:

"It is roughly estimated that a cow requires for sustenance $2\frac{1}{4}$ pounds of dry matter that science so selects for its standard per hundred weight, consequently a cow of 12 cwt. will require in rations 9 pounds of dry substance in a day more than the small animal. In the course of a year the excess would amount to several cwt., namely 29 cwt., and if valued in francs, $2\frac{1}{2}$ per cwt., the difference in money value would be per annum 72 francs, or, for ten years, 720 francs for a live weight of 4 cwt., of a cow after serving ten years as a milk producing machine."

As most of the breeds that are especially adapted in form and markings to the production of a large amount of butter or milk are medium or small breeds, it would seem that the German farmers are pretty correct in their conclusions. The general purpose dairyman wants, as a general rule, a large beefy cow, which from the very nature of her make-up must be squarely opposed to the most profitable dairy cow. Hoard's Dairyman puts it this way. "She is not built that way. The very form and breeding of the general purpose cow prevents her from being as profitable as a dairy cow should be and she can not execute a purpose she was not constructed for."

If a proper consideration was given the breeds by the dairymen in their selection of dairy cows, a decided advance would be made in the right direction and a large per cent. of profit would be assured from the start. A great improvement has been made in the last few years in developing the wonderful milk and butter producing capacity of some of the special dairy

breeds; more notably the Jerseys and Holsteins have made records in the production of milk and butter that entitle them to places in the front rank of dairy breeds. To illustrate more clearly I will cite several instances:

Mary Ann of St. Lamberts, a Jersey cow owned by Vallency E. Fuller, of Ontario, made in one year 870 pounds of butter. Jersey Queen, a cow owned by A. B. Darling, proprietor of the Fifth Avenue Hotel, New York City, produced 851 pounds of butter in one year. Princess 2nd, owned by Mrs. Shoemaker, of Baltimore, produced 46 pounds $12\frac{1}{4}$ ounces of butter in one week. I know that many will be inclined to doubt the accuracy of this assertion that any cow ever made 46 pounds of butter in one week, but the test was made under the supervision of gentlemen appointed by the President of the A. J. C. C. They were all sworn and made affidavit to the correctness of this report. Among the notable examples of the enormous milk productions is Clothilde, a Holstein cow whose produce in milk exceeded 100 pounds per day, owned by Smith, Powels & Lamb, N. Y., and the cow Mercedes, now dead, formerly owned by Thos. B. Wales, of Iowa City, yielded nearly as much.

A test of Bissons Belle, a Cattle Club Jersey cow owned by a Tennessee gentleman, shows a record of 8412 pounds and 7 ounces of milk, which yielded 1028 pounds and $15\frac{5}{8}$ ounces of butter; such results are marvelous, and ought to convince the most skeptical of the merits of breed. Yet we are aware that very many dairymen will characterize such statements as false without making any attempt whatever to test the matter and ascertain the correctness of the assertions.

These are, perhaps, exceptional cases, but by practical tests that are being made by thinking dairymen

in all parts of the country the great superiority of the special over the general purpose cow is being satisfactorily demonstrated.

The tests or fight of the dairy breeds for supremacy at the World's Columbian Exposition will be made from selected cows from the various breeds, and will be conducted so honestly and so accurately that the report of the test may be relied upon to be nearer absolutely correct than any ever before made, and may be safely considered and acted upon by every dairyman in the State.

The value of different foods and their adaptability to the production of milk, butter and cheese must be learned.

The merits of individual cows must also be ascertained, and any cow that will not make an actual profit to her owner should be disposed of.

If every dairyman in the State will take advantage of and profit by the lessons to be learned at the Dairy department of the World's Columbian Exposition, the dairy industry of the State of Illinois would very soon be placed upon a financial basis that would ensure a much greater profit at much less expense.

The purpose of the Columbian Dairy Association is to select twenty-five or fifty cows each, from all recognized dairy breeds; to select a superintendent who shall have full control and see that every cow is charged with all food consumed, and credited with all products returned, whether of milk, butter or cheese. There will be a dairy house constructed, where the work of manufacturing the product will be open to the inspection of all who may wish to learn in detail by practical demonstration the most valuable lessons to be learned in dairy husbandry. There will be seating

capacity for several hundred spectators. The results of the tests made of the different dairy breeds, together with the individual merits of each cow of each breed represented, will be embodied in the report of the superintendent, and will be of almost priceless value to the dairy interests of the State and nation.

This business is generally considered a fairly prosperous one, but it is only made so, on the part of many, by long days and years of laborious toil and drudgery. Within a radius of 60 miles from Chicago, one of the main branches of the industry is the shipping of milk to supply the demands of the city. It necessitates leaving warm beds at 3:30 or 4 o'clock in the morning, sometimes with the mercury 20 or 30 degrees below zero; rain, mud and slush make no difference.

The farmer, hired help, the boys, and frequently the wife and daughters have to rally around the milk pail, not once, but twice every day, and 365 days, 5 hours, 45 minutes and 45 seconds every year. Is it any wonder that under such conditions hired help is difficult to keep, and that the wife, sons and daughters want to move into town? The greed of some farmers for more land is proverbial, and is only equaled by the greed of many dairymen for more cows. Anything giving milk is a cow with many of them; they never stop to consider whether there is profit in her, but regard her as another cow to make more milk, to sell for more money to buy more cows with. If the lessons taught at the dairy department of the World's Fair shall result in weeding out unprofitable cows, and in the dairymen keeping only those which will pay a good profit—if it shall aid in systematizing his work, so that it shall not necessitate 16 hours work a day, and that more profitable results may be obtained from ten cows than are

now obtained from twenty, a much needed lesson will have been learned. That the business can be made a profitable one has been demonstrated by a few who are conducting the business on the proper business principles, who are keeping only the best cows, and are abreast of the times in dairy machinery and appliances, and do not keep too many cows for their feed and pasture. They recognize the fact that ten well kept, good cows pay a good profit at little care and expense, whereas twenty poor cows entail twice the expense and a loss to the owner. And the great trouble with the large majority of dairymen is, that they never study or figure the matter enough to know whether they are getting any pay for their work or not—and that a more thorough knowledge of the business must be learned by those interested can not be gainsaid. The World's Fair dairy show will teach lessons that, if followed by the dairymen, will result in doing away with a large part of the drudgery and long hours work now bestowed upon it. The prominence of the exhibit will create an interest and opportunity on the part of those desiring a greater knowledge of the business that, if taken advantage of, can not help resulting in a great financial and social benefit; social, because of the additional time gained that may be devoted to the cultivation of social relations. It was remarked at a Farmers Institute in the northern part of this State, a short time since, that dairying as there practiced was almost entirely destroying the social relations of those engaged in the business. Their dairy duties demanded their whole time, early and late. Such a state of affairs ought not to exist in the great free State of Illinois, and if the results determined in the dairy department at the great Fair shall revolutionize the business, as far as

beds are concerned, and open up a way that will enable every dairyman to make more profit on one cow than formerly made on two, thereby lessening his labor, increasing his prosperity and giving him time to attend to the other duties of life, then the great work of the dairy department of the World's Fair shall have proved to have been "a pearl of great price" to the dairymen of Illinois.

Music: Singing by High School.

ONE WOMAN'S EXPERIENCE IN DAIRYING.

MRS. CHAS. BEEDE, CHADWICK, HENRY CO., ILL.

Living on a farm all my life, I do not recall a time that I was not interested in dairying. My father kept a good many cows, and as it was the fashion in my youthful days, the dairying was done in the summer season. Strange, how happy, free-from-care childhood has a way of throwing a glamour around the commonplace things of life! Surely there is a charm about that butter-making of my childhood days that time and maturer judgment may have rudely changed, but not destroyed. The dairyman knows only too well that we have a great deal of what the world calls drudgery about the business now. In my early recollections there was nothing of that. There was "the bringing home the cows from the pasture." This pasture was a tract of unfenced woodland that pastured the neighborhood cattle and, I may well say, the neighborhood children; for no sooner were the children home from school than they were scurrying off to the woods, bread and butter lunch in hand, after the cattle.

I remember nothing about the feed the cattle had in those days, but I know now that the children had good food for mind and body. We first located the different herds of cattle by the sound of the bells; then came that "knowledge never learned in books." The birds, the squirrels, the wild flowers, the berries, the little marshes with their wonders, the wild grapes, the nuts—and oh, yes, while there were no chiggers in those days, we had snakes and mosquitoes, and now and then a wolf, the fear of which only added to the charm. We found *all* those wonderful, mysterious things nature has provided so bountifully for the country boys and girls, the memory of which comes after many years to the busy man or woman like a happy, restful dream.

Then the milking of the cows. If there was a hired man on the place who objected to milking, or dried up the cows or whacked them with the milking stool—memory has kindly and generously dropped him out. The milk was carried in wooden buckets to a stone spring house at the foot of the hill, strained into crocks and shallow pans—these set in pure, clear, cold water. Here my mother skimmed the milk, did the churning, washing and working the butter with her hands, and how the children loved to watch her make it into rolls. I know mother's spring house butter was not made according to Hoard, but there is a quiet suspicion in my mind that if that butter was placed upon the market to-day it would rank with the best Elgin with all the modern improvements. Surely no milk is so good or cream so sweet or butter so delicious now.

My mother long since discarded the spring house at the foot of the hill for several very good reasons; it was twenty rods from the cow yard and the milk had to be carried back in those same heavy wooden buckets

to feed the calves and pigs at the top of the hill. I have learned that her churn was anything but a "boss" churn, that she marketed the butter twenty miles away at 10 to 12c. per lb., taking all the pay in groceries and dry goods. I am well aware that the practical dairywoman will see more beauty in a rough-boarded old water tank under some wheezy old windmill, the tank containing some Cooley cans sunk almost out of sight in perhaps not very clear water—than in the picture memory brings to mind of the old stone spring house with all its bright array of pans set in clear, cool, sparkling water; but

"You may break, you may shatter the vase if you will,
But the scent of the roses will cling to it still."

Time in his swift flight makes wonderful changes. The dairy of to-day is quite another thing than my childhood dairy, but he has left untouched the innocent happiness of childhood. The boys and girls of to-day are just as happy as they were in my childhood days. The "little brown hands" still "drive home the cows from the pasture."

"Up through the long shady lane,
Where the quail whistles loud in the wheat-field
That is yellow with ripening grain
They find in the thick waving grasses,
Where the scarlet-lipped strawberry grows,
They gather the earliest snowdrops
And the first crimson buds of the rose."

As a matter of course, all the children of our numerous family learned the art of milking. There was one dear, patient old cow on which six of us claim to have learned the accomplishment. At any rate I recall two bits of humanity struggling with great enjoyment, one on each side of the gentle cow. However there came a time when practising this accomplishment was not *quite* so enjoyable—in the course of time, the fun developed into work.

Our parents were firm believers in the necessity of work and taught it to the children along with the ten commandments and the Westminster catechism. If it was not a panacea for *all* the ills pertaining to human life, it was a balm for the most of them; what was more, they tried to impress upon our minds something of the dignity of labor. We were taught early that there is no honest labor of our hands that will detract one iota from manhood and womanhood, but, on the other hand, add to it. Like most children, we felt the burden very heavy at times and no doubt did the usual complaining, but in the years of maturity there comes often a grateful acknowledgment of this early training.

If our boys and girls on the farm are well fed and well clothed, there is little danger of overwork.

We hear much about the dignity of labor, but more must be said and more taught. The children must hear it at home and in the schools; in our day of "strikes" and combinations too much can not be said about honest labor. It is said it is not the man who works that leads the "strike"; it is the man who wants money without earning it. I know on our farms it is not the man who works who does the mischievous grumbling; it is the man who wants a living without work; it is the same everywhere. Well for the boys and girls if they learn well the lesson of work.

Well time passed on, these were school years and a few terms of teaching district school, when one day the mother proposed to her daughters to turn over her share of the profits of the dairy, provided they did the work. All the father, who took special pride in his herd, asked was to have just as good calves raised as those fed directly from the mother on the mother's

milk. The plan was accepted, and at it the girls went in good earnest, and I tell you learned a good many things that will prove useful as long as they live. We read the dairy department in all the agricultural papers that came to the house—learned how to feed calves. The first lot were fed according to Winslow Bros., from an article in the Live Stock Journal on that subject. A certain proportion of oil meal was to be fed, but by some hook or crook it read flax-seed meal. We procured the meal and fed according to directions. In the spring something was wrong with our conscientiously fed calves. They did not shed their hair, looking like young buffalo as they moved about in the sleek herd, and furnished good cause for many sly jokes from the boys of the family. To make that hair shed, we increased the meal ratio, with no effect. By accident we found out that there was this mistake in the directions. Those calves came out all right though *we* thought a little better than the calves that got their food directly from the cow. We fed flax-seed meal afterwards, but used it more sparingly.

The feeding of the cows we had nothing to do with; but how quickly we learned that the feed had everything to do with the flow of the milk. When we found how valuable oats were for food for milk cows, it was no work at all to give them an extra feeding ourselves—that extra feed paid us well, but our father was strongly of the opinion it did not pay him; so much so that we were obliged to discontinue the extra feed.

We found some things about the dairying disagreeable and others pleasant, just like any other work.

At first we did a great deal of guessing. We tried the temperature of the cream by our grandmother's thermometer—the finger—and guessed it was right to

churn; we guessed at the coloring and salting; we did not weigh the butter, but guessed we got our weights all right. After awhile we guessed this guessing didn't pay. You see we read the papers. We churned by hand, using a "boss" churn. After much discussion among the younger members of the family, one of the boys bought us an old horse-power and made the necessary arrangements to churn by horse-power; the rods were coupled directly to the churn, so there was no belt to slip. It was with much interest and great expectations we made arrangements to churn the first time; the family gathered, even to our aged German grandmother, who declared with an ominous shake of the head that "by-and-by the men and horses would do all the work."

Old Barney, who had been considered a quiet, steady horse for twenty years or more, was hitched up and the circus began. Barney was not used to this kind of work; working alone on the horse-power seemed to develop a latent fire that no one dreamed of. Barney started to run as though running away—the churn followed suit. The spectators scattered, expecting to see the churn go out through the roof, anywhere. Barney stopped, and the churn stopped, too. Coaxing, blind-folding and all sorts of inducements were held out to Barney to do the churning for us, but without success, and as Barney was the only horse on the place that was safe and gentle enough for the girls to handle, churning by horse-power remained a "joy in the distance;" this was our most unfortunate experience.

Another ludicrous misfortune befell us while churning one warm, early, spring morning, out on the walk in front of the kitchen door. For some reason the churn was left standing alone for a few minutes. Suddenly

there came the cry, "Oh, look at the cream!" There was the precious cream running, streaming out as fast as possible from the churn and an old rooster hurrying off with the cloth-covered cork in his bill—selfishly keeping it a safe distance from his following horde.

If memory serves me rightly, the worst feature of the dairy business was, some one had to be on hand twice a day to milk the cows.

We had muddy yards now and then which made rubber boots necessary; keen cold weather sometimes, which made warm clothing necessary; we made some improvements, all of which cut into the profits somewhat—so we began to think of the cost of things. Another lesson learned was, that a dollar had another value besides what it would buy for us, that is, something of what it cost to earn that dollar. We began to be a little more saving in our purchases, bought fewer ribbons, gloves, feathers, etc. We kept account with each other and were exacting to a cent.

I believe if parents gave their boys and girls on the farm an opportunity at a proper age to learn by practical experience something of the value of money, it would save many a hard-earned dollar. Besides, the knowledge itself is a good start in life for the boys and girls.

As children we were taught early to be considerate of the dumb animals. In the dairy work we became especially interested in the cattle, we found they had much in common with human beings. They have the five senses with some of them keener than ours; they fear, rejoice and suffer pain; they respond readily to kindness and as readily resent cruelty. To man is given the power of reason, and I believe that the man who is cruel to his dumb animals stands just

the same chance of getting to heaven as the man who is cruel to his child.

I wonder if the children of this place have read the story of "Black Beauty." If not they must as soon as they can get it. The young men and women must read it too, and yes, older folks will find it very interesting and instructive. It is a book for everybody.

We were much distressed if any of our cows were taken sick. I recall the bewilderment in searching Law's Veterinary Adviser, for symptoms corresponding to those of the sick animal. They were there, but with so many shades and under so many different names—just like the doctor books of human beings,—the poor animal might have had any or all of the diseases.

It was in the days of the pleuro-pneumonia scare that we learned what one veterinary knew about that disease. One of the cows was sick with what we since learned was milk fever. We sent for a veterinary from the nearest town. He must have heard of the scare for he immediately pronounced the disease "Blue Mony." He thought that under his treatment the cow would get well, and paid several visits to his patient. Each time when asked about her condition he would encouragingly tell us, "symptoms favorable." At his last visit while "symptoms favorable" was still in our ears and the sound of his buggy wheels yet in the distance, the poor animal drew a last breath. It is but justice to say, I do not think this veterinary had a diploma, and it is said we have better ones now in the country.

Well, the part of the dairy business that gave the girls the most pleasure was the weekly returns. Besides getting a good price for butter, there were often a few words that were very encouraging. I

wonder if the buyer who wrote now and then "butter is elegant," ever guessed how much pleasure those three words gave? Why, they were simply inspiring. The milking was not nearly so hard; the calves were fed more patiently; we would willingly work a little harder to be able to furnish more of this "elegant butter" to our buyers. Quite a few winters have passed since then, but I tell you a secret when I say I like to hear such words still. I think we all do; it's "natur'." We want first the consciousness of a good article to sell, then a word of honest praise accompanying a good price is *always* acceptable.

In the summer season, not having the facilities for making "elegant" butter, we sold cream to the creamery. This was more experience. We learned, in the language of the early composition, that creamery men could be divided into two classes—good and bad. The good were very good, but the bad were horrid.

We continued in this way for a few years, not making such a fortune, unless we include health as a part of the fortune, for we were certainly hearty and healthy, but what satisfied. Then we were enjoying the privileges of a good home with our parents. It is only as we grow older that we appreciate all that a good home means; that place where is seen and felt the love which Hans Christian Andersen tells us "holds the world together." While the daughters of the family might have made better use of those few years, they have no regrets or no apologies, but look back to them with a great deal of pleasure. They certainly were not wasted years.

My last and most important experience in dairying is at my own home. My husband, who made a specialty of feeding cattle, knew nothing about dairying

and didn't care to know anything about it. I was very anxious to keep a few more cows, but, when questioned, could give the Yankee no valuable information about cost of feeding, etc. You see, my father had always furnished the feed before. But a few cows were added to our herd now and then, and now, although our little dairy is only a "side show" on the farm, it has a way of commanding considerable attention. Sometimes it threatens to crowd out the rest of the show.

We are working on the theory that we can raise better feeding cattle than we can buy, and have an income from the cows besides. So far, we still think the theory all right, but it requires an immense amount of work to put it in successful practice. In the first place we have learned that our best laid plans "gang aft, aglee" in the dairy business. We have learned that "eternal vigilance" is indispensable to good butter but when compelled to employ outside help in the dairy work that vigilance must be greatly increased. Many have been the irritating experiences connected therewith. We have found the man who is willing to milk when he hires, but it is the last time. We find the man who is uncleanly about the milking; the man who can't stop to milk the cows dry; the man who can't stand having his work looked after; the man who is cruel to animals; the man who will dry up the cows on the sly. These are all bad enough faults, but become almost unendurable when coupled with the un-American idea of the great class distinction between employer and employee.

These are the men who lose no opportunity to work discontent among all who may be employed to assist on the farm. They are the men who, although receiv-

ing the highest wages, are quite ready to leave the "capitalist" to do his own milking on Sunday night or "Labor Day."

I don't understand this "labor day;" likely it is because I am a woman and do not understand these things. I reverence the birthdays and all the legal holidays but "labor day," and I do not understand what it is for—unless it is for the politician.

Happily the men who do our work are not all of this class. We have had and will have men who are just what we want; faithful, trusty and capable. They are not the men who demand labor day, and if they do demand the highest wages are willing to give good measure in return. But these men we can't keep. They too are interested in homes of their own. They are taking up the profession, opening up the great West, making the best use they can of their capital of brain and hands, and no matter where they are and what they are doing they are among our best citizens.

For several seasons we have hired the girl in the house to assist in the milking of the cows. So far it is quite a success. I believe firmly that if the working girls could be persuaded that milking cows is just as respectable as washing soiled clothing, it would be a good opening for better wages. It is neither heavy nor hard work when one is accustomed to it. (I speak of the milking alone.) A woman's hands are better calculated for milking than the hands that hold the pitchfork or the plow-handles all day. We find the girls more patient and gentle with the cows. They do not use tobacco either. I do not think I ever saw a man that was mean enough to spit tobacco juice purposely into the milk pail, but when I see a man sit down beside his cow, place the pail between his knees, then

send a mouthful of tobacco juice to the four winds, there is always a suspicion that some of it found its way into the pail. It is certainly one of the bad habits that the dairyman can afford to dispense with. What a blessing it would be if our farmer boys and all the other boys too could be persuaded to let tobacco alone. Boys, just ask your mother's advice about the use of tobacco; then ask your father what he thinks of mother's advice, and I know, even if he uses it himself, he'll tell you "mother is all right, don't touch it my boy."

Well, I think the girls do not like to have the boys use tobacco either. Again, the girls do not hurry through their work to visit the saloon or the pool room to spend far more than their time and money; and how I do wish they would mitten all the boys that do. In our short experience the girls have been on hand Sunday evening and all according to agreement; one girl missed two milkings in nine months, another not any. A young man tells me "they have the advantage. They don't have to go to see the boys; the boys have to come to see them."

The only bad feature that I see of the girls helping milk is that it has a tendency to develop selfishness in man. Almost invariably the hired men milk the easiest cows.

We have another industry on our farm where we hire girls to assist with the work. We find them more careful and conscientious about their work than boys are apt to be at the same age. Things do not always move smoothly, oh, no; there are ups and downs—tempests as well as sunshine with the girls, and so closely is woman's heart connected with her hands that if there is any trouble in love affairs it is quite likely

to show in her work. We are fully satisfied, however, that there are many industries on the farm that a woman is well calculated to manage or assist in the work. I know of girls who work in farm homes that help or do the entire work of making the butter after the cows are milked, will churn down cellar in the summer season, carrying the water to wash the butter down and up the stairs, work the butter by hand, and all that, who would refuse to help milk in the dairy where the cream is churned by horse-power and the butter worked and cared for by a man, not because she does not like the work, but because it is not customary or the fashion—not just the thing. If a working woman does not like to do a certain work, it is her privilege not to do it, if she can do otherwise—that is her business; but if she has taste and opportunity for any honest toil, let her do it, and feel that it is nobody's business but her own.

The world has gotten a little mixed and consequently somewhat tired of telling just what woman's sphere of work is; but it will only be a short time till it will settle down to the fact that a woman's work, like man's, is just what she is able to do, and what she wants to do, and what she has opportunity to do.

We make our butter and ship to commission merchants. We think we have bought a little experience in this line. We were not long in finding out that commission men were something like the creamery men good, bad, and very often indifferent. It was a shock to the nerves when one part of a churning sold for 20 cents and the remainder for 8 cents—both sold by the same merchant. The 20 cent part of the churning was all right, but the 8 cent part had too much salt in it. Some of them had a peculiar way of making

our butter shrink in weight that we wished they hadn't.

Other products of our farm sold on commission have had various mishaps. Once when returns came for some perishable goods part of the stuff was reported "lost." What that meant was a mystery. We knew it had not had time to "perish." So not until a few Sundays ago did it dawn upon us what that mysterious word "lost" might mean.

A minister, whose work was in Chicago for a number of years, during his earnest, eloquent sermon to our small congregation of farmers, told a story. The story need not be repeated; but in it there was a family in want. "Now" said the preacher, "Chicago is a wonderful place for benevolence; if I needed anything, I had just to ask for it and I would get it. If I wanted a basket of provisions, all I had to do was to go down on Water street and there was no trouble getting the basket filled. Those men are very liberal." I think, dear hearers, you are all charitable enough to excuse the quiet nudge and the eye telegraphy that flashed around as the thought came of *what might have been in that basket*.

Still, while we farmers do a great deal of gossiping and scolding about commission men, we can't get along without them—the good ones I mean; and no doubt much of the blame we attach to them may be traced right home to our own farms.

About the profit of our dairy, we are yet unable to see "millions in it," but look hopefully forward to a time when we will—that time when we possess all the modern work-saving improvements—a milking machine included; that time when oleo and butterine, if colored at all, will be colored green or anything but butter color, just so the man who eats it may know what he

is eating. Nature has fixed the color of butter so we are not to interfere there; but I believe we dairy people are as much interested in fixing a color for bogus butter as we are in choosing the national flower. We certainly have a right to be.

In the meantime we will gather all the "gear" we can, believing there is enough of it if we work for it to give us

"That glorious privilege
Of being independent."

MUSIC HIGH SCHOOL.

ADDRESS

MRS. R. HOWARD KELLY, CHICAGO.

Called on to speak in the absence of a lady member* whose subject was announced as :

"Dairywomen at the World's Fair."

Mr. President, I certainly shall make no pretense of filling the place made vacant by Mrs. Wiles' absence, and for several good reasons. In the first place, I never made a speech in my life, and would not presume to be able to fill the place of a lady who is so well known as a speaker. In the second place, as some of you very well know, my acquaintance with the dairy consists chiefly in slipping into a cellar on a hot August day after a more or less successful fishing excursion, and disposing of a pint or two of cold buttermilk.

In the last place, I much fear that, should I undertake to speak on this subject, I should not do the lady's cause much good, because, for my part, except in the

*Mrs. Robert H. Wiles, Vice-president Illinois Woman's Exposition Board, was prevented from being present on account of the Board's holding a session in Chicago on this evening.

sense that I believe it has been adjudicated that all men embrace all women, I do not believe in the distinction that talks about dairy *men* and dairy *women* as those having different interests. I don't like women's clubs or men's clubs. I don't even like the idea of women's rights where it contains an assumption of being opposed to men's rights, and particularly in this great opportunity that is coming to all of us to show what we can do and be. We ought not to be *lady* managers or gentlemen managers; we ought to be managers working altogether. We ought not to be dairymen and dairywomen; we ought not even to be American men and American women, but all just American citizens working without a suggestion of sex lines, to the very best of our ability to make this Exposition what it is sure to be, because, when American men and women work together and are thoroughly in earnest, something good is bound to come of it.

When I met our worthy president on the train two nights ago, he began doing what he has done every year since he has been president (and that is a good many), urging me to "make a speech," as he calls it. I objected, as usual, but when he showed me the program that night I said, "I see you have a talk on behalf of the dairymen and another for the dairywomen. Now, give me five minutes to say a few words to the children, the young folks on these dairy farms, and I will do it." So here I am.

And I will tell you why I want to reach the young folks. Simply because I sincerely believe that 9-10 of the educational benefit of the great Exposition we are going to have will be received by those under 25 years of age. You can't do very much with old folks, they are most of them pretty much "sot" in their modes of

thought and it is a waste of time and effort to expect much of them ; but the boys and girls, the young folks just growing up, are impressionable, they are eager for new experiences and it will pay to put an environment about them that will fix the character of those impressions.

It is very frequently more than insinuated that a body can not hail from the "windy city" in these days and not begin immediately to blow about the big things *Chicago* is doing and the great show *Chicago* is going to have, but I want to say to the young people here, that while Chicago may do a little talking now and then, she really don't mean to be selfish or over-boastful.

Indeed a proverbial outcome of our great coming Exposition that troubles some of us is not that Chicago will not get enough credit (trust her for that), but that so many thousands are already there and will go there from all over this State and the whole United States and the world and look at all those magnificent buildings till their eyes ache, and walk about among all the wonderful things that will be there till their legs ache and then come away empty-handed and empty-headed, leaving it all behind, every marvelous piece of mechanism, every exquisite piece of statuary or painting, every curious bit of the old world, every one of the specimens of humanity and other animals that will swarm there and meet them at every turn. It would please me immensely if I could make a bit of a suggestion that would enable every one of you young folks to bring home with you (and of course you will all be there) a good solid chunk of something valuable, something different to anything you have in your homes now, something that will be pleasant to think about and remember as part of the great Columbian Exposition as long as you live.

You know Emerson, among the other good things he has written, once said, "If you would go to India and gain any benefit from the visit, you must take India with you," and so I say if you are going to the Exposition with the expectation of finding anything that will stay by you, you must take it with you ; or, in a little plainer English, you can not expect to be interested in things you know nothing about beforehand, no matter how interesting they may be to some one else. Now, I can in imagination see our worthy president visiting the Fair for the first time. I know just what he will do. He will make a B line for the elegant building where the Columbian Dairy Association is to run the Dairy School, and will probably spend most of his time either there or among the dairy cattle, and either will be a mighty good place to spend it. We shall see him there, unless through some influence he happens between now and that time to become interested and read up on archæology, for instance, in which case we will be spooking around among the old Roman and Trogan relics or absorbed in arrow heads from southern Illinois Indian mounds. On the other hand, your school teachers will haunt the educational department, some of your townspeople will be absorbed in the mining exhibit, and each man, woman and child will take the deepest interest in the subjects in which he or she is the best posted, and no lasting or what we might call absorbing or appropriating interest in the things about which they know little or nothing.

Now, you see, how it is going to work. There is coming to our very doors an opportunity of gaining detailed, accurate knowledge on a thousand subjects, which will never come again certainly to us, and probably not to our children or grandchildren.

There will be spread out before us—ours for the asking—enough object lessons to make every one of us for the rest of his life a man or woman of the highest and most varied intelligence equipped with the most liberal education that could possibly be acquired in or out of an university, and whether it means all that to us, or whether it simply means an enormous, tiresome stupid aggregation of *things*, with no life in them, depends upon our capacity for digesting them as we mentally take them in.

Somebody (not Emerson) has said that some folks can see more through a key-hole than some others can through a telescope, and so they can, and it is because the eye that peers through the key-hole is backed by a brain that recognizes a thing when it sees it. We can't expect to go to the Fair and assimilate all the thousand things we shall see, but years hence, when our grandchildren ask us "What did you see at the World's Fair in 1893?" we don't want to be obliged to say "I can't remember a single thing, but a lot of big Norman horses," or "a beautiful crazy quilt," or even the "Dairy school," and the number of different things we shall remember will be exactly in proportion to the number of different subjects we have made it a point to study beforehand.

I am glad to be informed that you have a good library in your town, and no doubt the officers will take pains during the next year and a half to see that it is supplied with such books as you need, not dry, heavy books, but books which like Miss Edwards' "Thousand Miles up the Nile," or Edward E. Hale's boys' book, "A Flight Through Egypt," will put life into a number and deep meaning into a pyramid, or Hawthorne's "Marble Faun," which will send you with eager feet to

the Roman department, or Bulwer's "Last Days of Pompeii," which will send you in Mr. Johnson's footsteps hunting for long-buried treasures beneath the Vesuvian lava, or Mrs. Catherwood's "Tonty," that will put a vital interest into everything connected with the early French missionaries in the Northwest, or Irving's Knickerbocker tales, or Hawthorne's novels, to brighten your interest in the deposit from Holland and early Puritanism, or some of the interesting modern histories that will make you ashamed that you know so little about your own country, or any of the fascinating works on geology, science, mechanics, or art, which will give you a feeling of being at home when you get among the good things out at Jackson Park. I will add a few more to the list, which I have thought of, since I wrote this in a great hurry yesterday.

George Ebers' "Uarda" and "Egyptian Princess," calculated to make you so absorbed in Egypt that you will want to pack right up and go there.

Lew Wallace's "Fair God," giving you a good idea of the magnificence of Old Mexico under the Montezumas.

Scott's "Heart of Mid-Lothian," setting you down in beautiful Edinburgh.

Dickens' "Tale of Two Cities," located both in London and Paris, and George Eliot's "Romola" in Florence.

George Cable's stories of the French settlers in the South and Chas. E. Craddock's tales of Tennessee; Helen Hunt Jackson's "Romona," which will make you feel that after all the Indians out West are made out of the same stuff the rest of us are. All standard books, most of them novels and first-class reading if you never get to the Exposition.

You can afford to put aside Dora Thorne and Mrs. Southworth, and the Duchess and Frank Leslie and the New York Ledger and lots of other so-called literature for a short year and a half and devote what time you have for reading to a slight preparation for the treat before you. Suppose you were to be invited to an elegant banquet given by the State Dairy Association next month, and the bill of fare were sent you showing the most delicious layout of everything that could be made out of first-class milk, lovely Charlotte Russe, rich cream, delicate cheeses of all kinds, ice cream, superb Elgin butter and milk punch, and suppose you were obliged to respond to that invitation, "Thank you, I should very much like to go, but my digestive organs have never been trained to eat anything better than skim-milk and sour whey and I can't appreciate your menu." No, you wouldn't do that, you would get right straight to work at cultivating an appetite for what you knew were better things.

Boys and girls, go to reading and to reading good books. If it goes a little hard at first, don't be discouraged, every chapter will be easier and after a while you will begin to feel that only the best is good enough for you. If it is hard to read alone, get up a combine. Choose a good book, invite your young friends, or perhaps one particular young friend, to come together once or twice a week and pass the book around, take turns reading, stop when you strike something you don't understand, ask each other questions, look up the answers in the encyclopedia or somewhere else, keep a bright look-out for suggestive articles in your weeklies and monthlies, keep a scrap-book, divide it into topics—architecture, mechanics, costumes, historical anecdotes, art and a hundred others. Carry it

with you to your meetings and give your friends the benefit of your discoveries. Compare notes, keep your brains oiled up, then when the time comes go up to Chicago, alert, wide-awake, interested, ready and eager for more information, and better information, and if ten million more or less young folks of our country go to the great Columbian Exposition in 1893 in that spirit and with that preparation the enormous outlay of money, time and brains put into this project will have been spent to good purpose, and its results will be seen, if not in this generation, surely in the next, and the next and the next indefinitely in the vastly increased intelligence among our people, in the more general welfare, and in the added wealth in those things that money can not buy.

Music—"The Dairy Maids' Song," by Miss Small.

Music—"No Hope Beyond," Duett.

Music—By the Band.

MR. W. R. HOSTETTER: The manufacturer of this pail of butter, Mr. Bowen, has taken the first prize. Mr. Bowen appreciates the fact that one of your citizens has been very active and has done much to promote the interest of this meeting and he would like to give it to the gentleman who has taken so hearty an interest in this matter. Mr. Bowen wishes to present this pail of butter which took the first premium in the dairy show, to Mr. Vail.

Mr. Vail came forward and received the pail of butter with the blue ribbon on it.

PAPER ORGANIZATION.

MR. MAWGAREL, KEWANEE, HENRY CO., ILL.

Mr. President, Ladies and Gentlemen and members of the Illinois Dairyman's Association: I feel a good deal like a tallow candle amidst a group of electric lights, there have been so many brilliant and accomplished orators who preceded me, and will follow after.

My subject for to-night, Organization and Education.

Now when I say organization I mean for the women as well as the men. I don't mean that we should organize one half and leave the other out in the cold.

I was an organizer and official instructor for the grand Order of the K. of L. for two years, the first secret organization that opened its doors on an equity to man and woman, the first organization to advocate equal pay for equal work. They used to call me a crank on organization and I suppose I was, but Abraham Lincoln said that it took a crank to turn the world. But I am not going to turn it. In the midst of an industrial age, when all ancient types are brought into contact with modern developments, it is a mere piece of political oratory to say that a nation's wealth is composed largely of bone and muscle. The doctrine of democratic prosperity hinges to a great extent upon the enlightenment of the individual citizen.

If a nation's brain power is a precious possession, steps should be taken for its discovery in all possible obscure hiding places and for its development into mature usefulness. If we admit the urgency of education to a proper appreciation of public questions and especially of the principles underlying moral and social

obligations, then we are bound so to conduct all our schools as to bring them into touch with the actual requirements of modern life.

Looking forward to the coming struggle for an efficient treatment of these problems, American citizens may congratulate themselves on being provided with excellent raw material. We must say there is vastly more ability among the American farmers than is commonly supposed, though unfortunately it lies for the most part dormant. These dormant talents can be entirely revealed and utilized, and for this end we should organize.

In the first place it must be understood that these natural talents do not generally make themselves manifest in connection with book learning. Compulsory education is far too mechanical, too much associated lately with money getting to be of much avail in the discovery and encouragement of this dormant talent. But a more true and rational education is that laboriously gathered from experience of life, and will fulfill the true purpose, stimulate and strengthen the natural faculties. The simple test of this kind of education is to be found in the success of the 1,700 friendly associations, the 2,000 building and loan associations, the 200 different kinds of trades unions, and various other types of society.

All are standing evidences of a great capacity amongst the industrial classes for conducting ordinary financial business. These societies and associations are nearly all under the direct control of workingmen. I will cite you to the famous co-operative stores of Great Britain as a most striking example of what can be done by a thorough system or organization.

These stores number about 1,500, and their member-

ship reaches over a million persons. The goods sold and handled in the course of a year will reach the enormous sum of over \$125,000,000, and some of the humblest and most poorly paid workingmen are on the directory of these enormous financial concerns, and exercise and wield a real and beneficial influence upon the management. Case after case could be cited where some of these ill-paid men have made their names familiar through the land by their eloquence and oratory in advocating co-operation and organization for the industrial masses. To indulge, however, in lauding the farmer and workingman would be labor lost. Such a policy would be more likely to provoke resentment than to win converts to the cause of organization.

It must be confessed that whatever abilities the farming and industrial classes may have, they are sadly deficient in polite and polished manners, and this small defect could be overcome in organization, for it would be a school of education in manners and learning. But this makes little difference with our theory of dormant talent.

These unpolished farmers, as they are called, have turned out some remarkable men in all callings and professions. We also could cite you some very distinguished statesmen, artists, doctors and lawyers who were not famous for their polite and polished manners. Another very serious drawback to the organization of the industrial classes is a tendency to be jealous of the success of each other. If one man gains a little notoriety or a public office all the others will try to pull him down and keep him just where he is, instead of giving him a helping hand.

This should not be, nor do I think it would under a proper and thorough organization. Public activity compels a careful study of the newspapers, magazines and farm journals to keep the individual in constant touch with others whose example and conversation may prove a stimulant to him. But this involves a considerable sacrifice of time and money, but it is a paying investment.

This fact in a great many cases seems to be a curious drawback to self-education. One is sometimes astonished at the information concerning events and things that is picked up from the newspapers by the industrial classes that have no time for systematic reading.

While we may confess that there are many shortcomings amongst the farming and industrial classes, yet we hold that they have proved themselves possessed of considerable business ability and that this ability could be revealed quicker and better through a proper organization.

Therefore, I concluded that if suitable machinery was provided in the shape of organizations for its discovery we would find among our farming and industrial classes a mine of wealth in the shape of dormant and wasted abilities, but it may be urged that the market for such talent would be overstocked; on the contrary, skill and talent in every department of life are rising above par. In every trade, profession or calling, some degree of success is attained by routine commonplace faculties, but it does not rise to distinction. But whatever the amount of ability which we find running to waste among our farming and industrial classes it is certainly worth saving. And the practical problem is to find a suitable channel into which to direct it that it will be utilized to the best

interests of the community at large. This is certainly a good argument in favor of an organization founded on broad democratic principles in our farming and industrial communities.

It is a notable fact that we have almost reached the ultimate limit of democracy in State government, without attempting to apply it to our agricultural industries.

May it not be believed that a man that is competent to play an elector's part in the business and government of the State and Nation? Should he not also be competent to bear a share of the responsibility of an organization that would have for its object the education and utilization of the dormant talents?

Should we not then form some kind of an association that would enlist the support of the best farmers in this country, who would help forward the solution of the industrial questions?

We would effect a great saving in time and labor by utilizing the talent now going to waste.

We can say that a few farmers have had their abilities recognized and appreciated, but the great masses have not, but would prove equally as worthy if they had an opportunity. The two great factors in this country, were they thoroughly organized, could dictate any policy they chose, and should they unite politically they would become the governor instead of the governed.

These two elements are made up of what is called the middle classes—the mechanic and the farmer. They would not only prove themselves the bone and muscle, but the brains as well, and finally I would advise the farmers to form societies, with aims and objects something like this:

The object of this association is to improve the con-

dition of its members. Bring farmers together and inculcate a spirit of fraternal friendship in their relations with each other. To make each member feel that he is not alone in his daily efforts to make a respectable livelihood, to make him look upon himself as a part of that entire body of farmers who form an "important element in the agricultural and commercial interests of a great community," whose common object is the welfare of all other farmers, thereby infusing a spirit of dignified independence, which can not fail to elevate his character as an individual and stimulate him to conscientious discharge of his duties as a good citizen.

These are some of the influences which must render a society not only of great benefit to its members, but of equal good to the community at large, for to what extent we elevate the moral and social state of its members, in the same degree will it benefit the community, by the development of a better class of citizens. In addition, its aims would be, by all just and honorable means, to further the interests and welfare of all its members.

Organize each school district, and your wives and children make each Saturday afternoon a half holiday. Discuss questions of interest, such as bad roads, universal mail delivery, stock and dairy. Read papers, sing songs, and make it an event that you can look to with a great deal of pride.

Your grain and stock will not go to waste, nor your work run behind, for with the good time you have had your work and cares will be lighter, and your everyday life will become brighter.

Organize a dairy and creamery in this beautiful, flourishing and industrious city of Kewanee.

Finally, I would say, organize, educate and elevate should be the watch-word of every farmer.

RIPENING CREAM.

MR. JOHN BOYD, OF ELMHURST.

What is meant by ripening cream? Are the best results obtained by the present methods? We all understand very well what is meant by ripe fruit, and those of us who have eaten the mature peach or orange ripened on the parent stem can appreciate the full meaning of the word in connection with fruit. The stock feeder who has brought his favorite steer to the highest state of perfection, fully matured, by a judicious course of feeding and handling, says the animal is ripe. Up to a certain point the fruit or the steer are unripe and immature, beyond that point they grow stale. Shakespeare says:

“From hour to hour we ripe and ripe,
And then from hour to hour we rot and rot.”

It is true the term in connection with cream is of modern application, yet it has a still greater significance in the management of cream, because of its extreme perishable complex nature. I regard the ripening of cream as by far the most important operation in the art of butter-making, because it requires most skill and judgment on the part of the operator. If cream is not ripened sufficiently there will surely be a serious loss, not only in quality, but also a loss in quantity of butter in churning. The same is true if cream is allowed to become overripe. It is indeed a very fine point to know just when cream has arrived at

the best possible stage for churning to insure perfect results in both quantity and quality of butter, in fact by the ordinary methods employed that condition is an unknown quantity, and I believe so long as those methods are continued will ever remain so. Until lately we have only guessed at it, even now the best we can claim is to closely approximate it. How wild our guesses have been, in fact are to-day, is now being brought to light, so far as quantity is concerned, by the use of Dr. Babcock's milk tester; this method is a sure detective when applied to buttermilk; it shows the losses in buttermilk owing to imperfect ripening to be very much greater than anyone supposed, and this test is revealing to us more than anything else the great imperfection that has and does exist even in the highest state of the art. The necessary change required to ripen cream is a chemical reaction produced by a lactive ferment, which sets free the butter globules in the cream from the albumen and casein which surround them, more or less perfect in its results according to the conditions surrounding the entire operation from first to last. The ferment in cream is analagous in operation to that produced in brewing beer or making bread. Good brewers and expert breadmakers who have experienced the uncertainty of producing two batches of either exactly alike will appreciate the difficulties in the way of the buttermaker when they learn that cream ripening is a very much more complex and delicate operation.

There are two prime objects to be attained in ripening cream. First, to develop and preserve intact the delicate aroma so much sought after in butter, and second, to insure an exhaustive churning by exhaustive churning. I mean when the buttermilk tested by the

chemical oil test is shown to contain not more than 2-10 of 1 per cent. of butter fat, this may be called good work, although it is quite possible to reduce the loss in the buttermilk to one-half this amount—that is 1-10 of 1 per cent. I have proven this much in my own work to my entire satisfaction, and on that this statement is made. I will not attempt to go into the mysteries of the development of the aroma in the ripening cream, for that I believe is clearly beyond human ken, and at the best a matter of speculation. We know that the perfumer who produces the rarest and most delicate perfumes uses several ingredients that are of themselves disagreeable to our sense of smell, yet when carefully blended in proper proportions delight the most sensitive olfactories, so that it requires no great stretch of our imagination to suppose that the flavoring acids found in butter, which are of themselves simply disgusting, are in some inexplicable way and in such proportions released, developed and blended by the action of the lactive ferment, as to produce the much sought for delicate aroma. I know it is claimed for certain European experts that they have discovered the bacteria that is claimed to produce this delicate flavor, but it is my humble opinion that bacteria are in no sense producers of this aroma, but that simply acting on the substances in the cream they release the flavoring acids in just sufficient proportions that when blended delight the butter expert. Whether they owe their origin to a ferment in the milk itself or are introduced from the air is an undecided question. A famous French chemist has succeeded in extracting from the mammary gland a ferment which possesses the power to convert albumen into casein, certainly quite as extraordinary a result as that the milk should contain a ferment capable of producing lactic acid.

My simple work points unmistakably to the conclusion that the ferment is inherent in the milk, and should not be derived from the air. I have some ideas on the subject of flavor in butter that I presume will call up a flood of opposition, but careful observation and attention in my own dairy afford me no other satisfactory explanation. I believe the aromatic flavor in butter is perceptible to only one of our senses, that is the sense of smell, and is in no way attributed to the food or water consumed by the cow. Not all the food in the State of Illinois is capable of producing the delicate aromatic flavor valued so highly by the consumer. Other flavors perceptible to the sense of taste or smell come from the food and water consumed and the healthful condition of the cow. For we know that if we feed cabbages, onions, musty clover, some kinds of ensilage, barley sprouts, rye and many other kinds of food, they have a decided effect on the butter and can be detected very readily in butter unless eliminated from the milk. It makes a vast difference, however, in this respect whether the food so consumed is simply a vegetable or fermented food. So also the flavors can be greatly improved by a selection of suitable foods and pure water, but in no case can the flavors so produced stand as a substitute for the fine volatile aromatic flavor or rather perfume so delightful to the expert's keen scent. The second prime object in ripening cream, that of the recovery of the butter, is very important to the manufacturers, being a plain question of profit or loss. In this State the losses from this source alone, if recovered, would be sufficient to cover the entire cost of churning and working every pound of butter made in the State, and leave a large margin for other expenses besides. The average loss of butter in buttermilk is stated by a standard authority to be from

5-10 to 75-100 of 1 per cent. I believe, however, that these estimates have reference to European work, for I know from my own observation that in a great many cases the losses far exceed these estimates, in both private dairy and creamery work, in fact more than twice as much in many cases. The average loss is very difficult, if not impossible, to determine with any degree of accuracy, because the variations are of daily occurrence, nearly as variable as the wind or the temperature of the atmosphere. The only way to arrive at any definite conclusion in this respect is to apply the chemical oil test to every churning, making sure a fair average sample is taken for the test. Without going into extreme cases this test will show a loss of all the way from 50-100 of one per cent. to three per cent., the waste being more in the winter than in the summer. It is very difficult to convince creamerymen of such losses as these, and next to useless to mention them to the average dairymen, yet it is these daily leaks that, appearing small at first sight, go to make up the great aggregate in the course of a season or a year. Before the chemical oil test was introduced no manufacturer of creamery butter would listen for one minute to a proposition looking to the saving of a part of the butter lost in the buttermilk, owing to imperfect ripening; even now when the testing of buttermilk is reduced to the minimum, not only in expense, but also in time, the great difficulty is to get the testing done; they would rather plod along in ignorance and stand the loss, or make the other man shoulder it, than take the trouble to investigate. I have no doubt that this state of affairs will continue in the majority of cases until competition actually drives the occupant into a faithful examination of the losses in ripening cream.

WHAT IS MEANT BY RIPENING CREAM.

JOHN BOYD, CHICAGO.

Mr. Boyd: Mr. President, it is a well-known fact that the dairy school, or rather our experiment station at Champaign is not up to our sister States, and that the dairy has not received that attention that it deserves. I think there is no good reason for this. Probably the principal reason is that we have not asked for much. We have not called upon those gentlemen and asked them to give us just as good a dairy school as they have in Wisconsin or New York, or in Vermont, or in many of the other States, and I think it is only proper that this association should send a committee down there to confer with the president of the college, and see if we can not have just as good an experiment station in Illinois and as good a dairy school as in any other State.

I beg leave, therefore, to move that the president appoint a committee to go to Champaign and see the authorities there and make the best arrangement they can for this purpose.

Motion seconded and carried.

The President: I will announce the committee who are to visit the State Board of Agriculture: John Boyd, chairman; H. B. Gurler, J. H. White, W. R. Hostetter and, by motion of the convention, the chairman.

Reading, by Mr. Porter.

Music, Band.

Little "Things," D. W. Willson, Elgin.

The Convention adjourned to 9:30 A. M. next day.

LITTLE THINGS.

D. W. WILLSON, ELGIN, ILL.

The question uppermost with us all in our various callings, whether on the farm, in the factory, or store, is how shall we improve our pecuniary and social condition? The object of these gatherings in the interest of the dairy is to help not only the well-posted and old-time dairymen, but to give the beginners the benefit of the gathered wisdom of years of experience.

Those of you who are just about to enlarge your dairy and give it more attention are here hoping to learn something that will help you in your new departure. You have had learned talks on feeding and breeding, on the bacterial subject, and many other good things; but now I have to tell you of some of the *little things* that will be of use to you and help to make your calling, whether general farming, or some special line, more successful.

The farmer who has been taught to observe generally can see how and where a stroke will save both present and future work.

Taking the dairy as the starting point, we will tell you of some of the details, attention to which will pay in every way.

The cow is the foundation of all successful dairying, and a right start with the machine that makes the milk is the important point. All of you who have cows know that some give more milk than others, even on same feed and with same care, but you do not know why. There is a reason for this. The cow with a large udder, broad back, deep chest, with well-developed lungs and digestive powers, can best assimilate and turn into milk

her food, and the cow of whatever breed that has this faculty best gives best returns for her care and feed.

You can learn by observation something of the points that go to prove if the cow you own is that sort or not. This may not seem important, but you must remember the cow is a machine for transforming the feed of the farm into the complex article we call milk; and the machine that does this work at least cost is most profitable.

Having the machine it is necessary to provide the fuel and other accessories to run it to its fullest capacity. This is also a *little thing*.

The professors at our experiment stations have been working on this problem for years and found that a ration can be so mixed that sustenance can be had without loss, and the balance go to milk production.

Balanced rations give milk if put through the right sort of machine, at least cost. This is a *little thing*, but on this depends greatly the success of your dairy.

The *care of the machine*. I have seen in this great, broad, fertile West, expensive machines left to rust and rot in the sunshine and storm, simply from lack of care. So of the cows: proper care is a little thing, yet it makes the machine not only lasting but profitable. How to best care for a cow would require the whole of this session. A few things only can be said. Treat the cow with kindness, give her a good warm shelter, a good comfortable bed, plenty of pure water to drink. Milk is about 85 per cent. water at the best, and we should see that the machine has plenty of that element if we want large quantities of milk. A little thing to remember is, that the cow is an *organized living machine*, has heart, blood, lungs, and above all, nerves; can be hurt both physically and nervously. Quiet con-

tent in this case brings great gain. The contented, happy cow is the large milker. It takes but little to make her contented, and it pays.

Having the machine, with proper feed and good care, the next *little thing* is to milk properly. The amount of filth that is found in milk is simply awful. I will give you only one instance of this: In starting an Alexandra Cream Separator in one of the older dairy districts, after about 12,000 pounds had been separated the bowl was removed for cleaning, and a wall of solid black mud on the inside of the bowl, an inch thick, was found. The milk had been strained twice at the factory, possibly also at the farm. You can imagine the condition of that milk, as you know milk is very susceptible to odors, and the cowy odor comes from filthy surroundings.

How careful, then, you should be to have the hands and stables thoroughly clean, the udder also, during milking, as bad odors once in the milk can hardly be eradicated.

Cleanly milking is a little thing, but it pays.

In the Wisconsin experiment station it was found that the per cent. of fat was greater when a certain person did the milking. The result was the same on whatever cow the experiment was made; how and why the professors could not determine. And as to quantity, you all know some milkers secure much larger yields from the same cow than others. To show you the importance of this little thing to you, as dairymen, a loss of only two-tenths per cent. of fat in the milk for a year would mean, with butter averaging twenty-five cents, a loss of \$6.25 on every cow.

How to get the most out of the milk is the next *little thing*. This depends on your location. Of all

ways of disposing of your product, the best, if suitably located, is for the retail milk trade either to ship to a large city or by delivering in a smaller one. But very few are so situated, and the great majority of dairy farmers must look to other means for turning their product into money. The private dairy when handled right will bring good returns, but it requires not only skill in making, but experience in selling the product to get the best result. Butter from the private dairy sells for the highest prices of any made, but the proportion of this is so small that it is not counted in the commercial world. The men or women on the farm to-day who know how to make fine butter are few and scattered.

The establishment of creameries and cheese factories in locations where sufficient milk can be had to make it profitable, is the best method for the ordinary farmer to dispose of his milk.

The factory must get a fair price for the risk and manufacture of the butter and cheese. This the farmer must pay on the same basis that the miller takes toll from the grist. Some of the advantages of the creamery to the farmer may be in order.

The farmer has his own work on his farm, and to do best, must give all his thought and attention to that. He must look after his cows and has no time to study the problems that confront the manufacturer of cheese and butter. The factory, with skilled labor and best appliances, will make from ten to twenty-five per cent. more butter than the farmer can at home. What is that worth to a twenty-five cow dairy? Let us see.

The cows ought to give 5,000 lbs. of milk apiece at an average of \$1.00 per hundred lbs., making a gross income of \$1,250.00. A loss of 25 per cent. would

mean \$312.50 less income from the same herd, provided the same price was received for the farm dairy butter as for that made at the creamery. This little per cent. gain is another of the *little things* that go to make the dairy pay.

Knowledge of the business is only a small item, but it is a well known and established fact that the dairy farmers who are best informed on their business make the most money, and that is the object for which we are all working.

I can not close this talk on little things without reference to the great fraud and enemy to the dairy, Oleomargarine. At the last session of our legislature attempts were made to secure such laws as would compel all dealers to sell the stuff for what it is, but with a fair number of farmers as representatives, none of the measures introduced became laws. The money behind this interest was too strong, or our farmer legislators were not rightly informed as to the injury that is being done to the dairy by this great enemy. As voters, the farmers can demand of their representatives such legislation as will compel all interested to advertise the fact that they are selling oleomargarine.

Will you remember this when some silver-tongued orator of the special pleading class (lawyers) asks you for a vote? Just ask him how he stands on the subject, and do not take any uncertain answer; have a distinct "YES" or "NO."

The convention met at 9:30 the next day, Feb. 26, 1892, the president in the chair.

The president appointed the following committee to visit Champaign in accordance with the motion carried the evening before: John Boyd, Chicago, chairman;

Ralph Allen, H. B. Gurler, and on motion of the convention the president was added to the committee.

Mr. A. B. Hostetter: I think it would be a great advantage in this work if we could put on a man who has always taken a great interest in the dairy business, and I move that Mr. Chester be added as a member of this committee.

Motion seconded and carried.

The Chairman: The executive committee had a meeting and they authorize me to go to Springfield to persuade some members to make our institution what it is, in fact, a State institution. If this can be done our appropriations can be used in any way which is proper. The bill was introduced and passed the Senate, but in the hurry of the last day it was crowded out and never passed the House. I hope the committee on legislation will make that a part of their business to urge the passage of such a law. The Horticultural society is a State institution, as well as many other associations, and it would be only just to us.

Mr. Allen: I move that we have a committee on legislation.

Motion seconded and carried, and on motion of Mr. A. B. Hostetter the committee just appointed to confer with the State institutions in regard to the State dairy school was also appointed the committee on State legislation.

The *following six essays* were entered for the prize offered by Cornish, Curtis & Greene, the stenographer of the association to act as judge, and No. 3 took the prize.

PAPER NO. 1.

PAPER ON THE ORIGINAL IDEAS IN
DAIRYING.

Mr. President :

I am a man of a few words and ain't much on writing, but, seeing you had given a chance for them who keep cows and make butter in the original way, I thought I would write a few lines on the subject to let you know how I feel about it. I don't want to get that 10 bottle fixing your little book tells about for a prize, for I wouldn't know what to do with it, anyhow, and if I should take it home my folks would think some one had been swindling me; but I do want to see how the stenographer works up a paper. I always had an idea that there was a machine of some sort or other that worked up the notions that we see printed in the farmers' papers. Now it seems to me the original way of setting milk in crocks and pans till the cream comes up of its own accord is the only natural way of doing and is a great deal cheaper and better than buying all these new-fangled things that cost such a heap of money and a great deal easier on the horses and men folks than hauling the milk away off to some factory and paying some feller to take the cream out with one of those whirling separator machines, and the farmer only get back the skim-milk for his trouble, and the skim-milk when the farmer does get it back is so thin it won't raise a calf without buying feed stuffs—that cost the farmer more than the calf will fetch when the calf is raised. Now, Mr. President, I know the ruination of the farmers of this country is because the farmers keep themselves poor trying to buy all them new ma-

chines that are being invented for the purpose of raking in their hard-earned dollars. Some of those gentlemen who come to these meetings to show up their machines are pretty smart fellers; they talk pleasant like, and some of them look like as if they were honest men, but I advise my feller farmers to go slow.

My mother was the best butter maker in the county back in York State, and my wife can beat any factory ever run to-day making butter, and she doesn't have any of them expensive things to work with either, but she tends right to business and makes boss butter, and her butter has a flavor when you eat it on hot griddle cakes that this sweet creamery butter that you talk about doesn't have,

Now, Mr. President, I want to say before I close this paper that I know that the original cow that we used to have before they begun to fetch in them new breeds is the best cow for the common farmer.

I don't take any stock in a cow that you have to have a college professor and a lot of testing machines to tell what her milk is made of, and then them new breeds have to be fed one kind of feed when you want them to grow and another kind of mixed feed when you want them to give butter, and then you have to be eternally looking after them to see that they produce the right kind of a calf. No, sir, Mr. President, the original cow that can grow or give milk on what she can pick up on the farm, with a few nubbins of corn on bad days and a little bran slop when she comes in, is the most profitable cow for the farmer, because she has a better constitution and doesn't cost as much as the Jerseys and Holstein cows do.

As I said before, I am a man of a few words, but what I know I know, and with these few remarks, Mr. President, I will close.

PAPER NO. 2.

A daily record of the weight of milk given by each cow in a dairy herd is, of itself alone, of very little value in determining the relative value of each cow composing the herd, because the weight of the milk is no indication of its quality. The practice of keeping such a record is, however, of sufficient value to abundantly repay for the expense incurred. Such a record is a valuable indicator of the physical condition of the different animals. Any material irregularity in the amount of milk given by any cow indicates something out of order in the cow's health, or in the feed or water or treatment.

Weighing the milk shows the importance of milking the cows regularly at even intervals of time.

The effect of such a record is most salutary upon those doing the milking. It creates a greater interest in the work of milking, creating a spirit of emulation among the milkers to have the cows in their charge excel the others in the quantity of milk given; and when the weighing is done in plain sight, the effect is better quality of work being done, and rarely will any cows be left half milked.

Such records show the effect of slow or incompetent milkers, the yield of the milk varying with the skill of the milker.

But however useful these incidental results of such a record may be, if it is coupled with some easy method of calculating the quality of each cow's milk, the knowledge thus gained of the real merit of each cow in the herd will supersede all these other advantages. The Babcock test is the only simple and accurate method by which the quality of milk may be measured. With the use of this test and the scales the dairyman soon

learns the worth of his different cows, and knowing this, most men know how to act.

PAPER NO. 3.

"The laborer is worthy of his hire."

"Nothing new under the sun." I claim the following not as a new idea but as a good, sound, practical suggestion.

Every creamery and cheese-factory owner should give his employees some little share in the net profits, so as to make them interested in the little savings. A pound of salt here, an ounce of color there, a pint of oil here, a bushel of coal there, a little more attention to the weigh can, a little cleaning up here and a little stirring of the cream there, and so on.

Three hundred dollars spent thus would be the means of saving double the amount; would tend to a truer co-operation; to the solution of the labor question; to a practical, ocular demonstration of true Christianity, and a better financial result.

PAPER NO. 4.

DAIRYING.

According to W. R. Hostetter, one of the greatest industries of our country.

Dairying, the profession requiring the best physical, moral and intellectual ability that the country affords.

For physical ability, view the width of Tripp and the height of Sawyer.

For moral and intellectual ability, recall Mrs. Holmes' fearless words for justice; Lovejoy Johnson for protection against fraud; the scientific experiments of Farrington and Allen; the kindness of Vail; the instruction and entertainment of Mrs. Good, Dysart, *The Prairie Farmer* man and Curtis. For business ability just listen to the telling words of John Boyd and A. B. Hostetter.

Dairying, the business that brings before us the benign countenances of Mrs. Kelly and the reporters. Also those dreadful looking fellows, the salt and butter color men.

Dairying, the profession that displays the great *heart*. Just think of Professor Dexter's generous invitation to *all, everybody*, to come to this great "dairy school" *free of charge*; think also of the great offer of the premium of the Babcock milk test.

Dairying, the profession calling forth the eloquence of a Ladd.

Dairying, the profession that appreciates the hospitality and musical talent of the people of Kewanee. Also the presidential mistakes of Johnson.

Dairying, the profession that brings forth the best labor saving and scientific inventions of the age. Prominent among the latter, "The Babcock Milk Test," the value of which the writer would gladly test through the influence of these few words.

PAPER NO. 5.

Get the best cows of whatever breed you fancy; keep them in a thriving condition by feeding plentifully of the best milk ration. Have the fastenings in

your stable easy and comfortable for the cow (tie straps preferred). Keep your barn as free from bad odors as possible. Bed cows plentifully with clean, dry straw.

Milk not only gently and quietly, but with perfect *gentility*.

The moment the milk is drawn from the cow, cool it by plunging into cold water down to 55° or 60°. This should be done regardless of your manner of securing the cream. Having secured the cream, either by the old process or by aid of a separator, exercise the utmost care in ripening. The quality and quantity of butter depends largely upon this process. If possible use Boyd's Starter. Use conscientiously the thermometer. If in winter, put it into the churn at about 62°; in summer, if in a cool butter room, at 58°. If in a creamery, use a hardwood box churn; if in a private dairy, use the Boss hardwood churn; never use a softwood churn. Revolve churn slowly till cream breaks, stop churn instantly, draw off buttermilk at once. If danger of white specks, wash with strong brine; if not, with the purest, cleanest cold water, till there is no sign of buttermilk left. I should have said, before starting your churn put your color in. (Use either Hanson's or Thatcher's.)

Remove carefully from the churn to the worker, salt with Genesee or any other good salt, to suit the taste of your customers; three-fourths of an ounce to the pound is the usual rule. Pack in the kind of package that the market demands.

Work no more than is absolutely necessary; skill and judgment will dictate here. Be sure to have your butter, when put upon the worker, in granules about the size of shot.

The greatest care must be observed at every stage to have everything and everybody clean about the churn and work-room. Remember that cleanliness is next to Godliness. Always send a package of this fancy, gilt-edged goods to the Illinois Dairy Association meeting for exhibition.

PAPER NO. 6.

It is taken for granted that a person who has decided to embark in dairying has the necessary cows and the land to produce their feed. The selection of the cows will be determined by which product is the object—milk or butter. After that is settled, then the important point is to get it in its greatest perfection, whether it be milk or butter. To be successful, the person must be intelligent, thoughtful, observing and industrious. One thing he must have impressed and fixed on his mind is, that a cow is only a machine or a means for converting hay and grass and grain into milk and butter.

Now this machine is of the most delicate and sensitive construction; is influenced by the most minute conditions. Such as her surroundings in the stable, and pasture, the quality and quantity of feed, also the water, and particularly the degree of temperature at which the water is taken in winter. All of these things must be carefully looked after by the dairyman if he gets the *best* results. If he furnishes his herd the best of feed and plenty of it, and allows them to be harassed by a yelping cur dog, or abused by thoughtless help, or uncomfortable stables, he is wasting a large percentage of his feed, and consequently of his

profits. As a *rule* people who are comfortably housed and well fed and do not have to exert themselves too many hours each day to obtain these things, are usually at their best, and cows are no exception to this rule, and if they do not have these things, they *will not* do their *best* for their owner, whether they are *thoroughbreds* or *scrubs*. But whether they *are* thoroughbreds or scrubs, get the best of the kind.

Scrubs with plenty of feed, good care and kind treatment, will be far more profitable than thoroughbreds with scant ration and neglect. The old maxim that "the feed is more than the breed" holds good in dairying.

Never in the history of dairying has such improvements and revolutions been made as in the last ten years. Science and invention have come to the assistance of the dairyman, and the investigations at the experiment stations in the different states are proving many old theories of feed and feeding erroneous; making it necessary for the successful dairyman to keep himself well informed on all investigations in dairying and agriculture, and, above all, watch closely all his own experiments with feeds and feeding, and note if the results pay the cost.

After the dairyman has the best herd of cows he can get, and has given them the needful care and the proper kind and quantity of feed, there is still another important matter that demands his constant, watchful care, and that is cleanliness in the product of the dairy.

There is always a demand from the public for the **BEST** of every article of food at *profitable prices* to the producer. And the **BEST** milk, butter or cheese can not be produced without absolute cleanliness.

It might almost be said that cleanliness is the road to *perfection* in dairy products. Certain it is that the *best* can not be had without that important care, and it must begin at the stable. Keep it as free as possible from all foul odors. Keep a pail of water and sponge, and when the yards are muddy have the udders washed before milking. Never allow milk to stand in the stable longer than necessary. Look carefully to the washing of all dairy utensils.

THE FARMER, WHAT HE SHOULD BE AND DO.

BY WILL CURTIS, EDITOR OF KEWANEE STAR.

Very much of the time of this important meeting thus far has been taken up with a discussion of every part of agriculture except the farmer himself. The farmer's land, the farmer's cows, the farmer's markets have all received attention, but the real live farmer has not been presented for criticism. There is an old saying that if you would cure an evil you must strike at the root of that evil. If you would elevate agriculture you must elevate the farmer.

First, I would say then the farmer should be a *man*. An idiot, a dude, a knave, or a criminal, is in no way fit to honor the high calling of a farmer, for there is no more worthy or noble occupation in which man can engage. The farmer should be a man morally, physically and intellectually. His duty to his family, his duty to his neighbors, his duty to his country demand that he follow the precept of the Golden Rule: "Do ye unto others as ye would that they should do unto you."

He should be a man physically, that he may stand the toil and exposure incident to the life of a farmer, and that he may transmit a strong constitution to his sons and daughters, the future leaders of this great republic. He should know the laws on which his own life and health depend.

He must have capacity for thought and action, hence he must be a man intellectually, before he can be a farmer.

It is a great mistake to think that if a man fails at every other business he will succeed as a farmer, or that everybody knows enough to farm. Just as much business ability, just as much brain power, just as close an attention to details is required to be a successful farmer as to be a successful merchant or business man. Farmers who make failures can generally trace their lack of success to the very same cause that the business man will. It is either shiftlessness or unwise management. In short, lack of ability. A successful farmer in the Illinois legislature struck the nail on the head when he said that a successful farm needed a good top dressing of brains. The farmer, to get the knowledge he needs in his business and to keep himself informed on the markets and current events of the day, should take newspapers, not one paper only, but several. This calls to mind a little incident that happened in Kewanee. A worthy young couple came in from the country one morning and repaired to the minister's house to be married. One of our justices who had married a number of couples in his day happened to be there also. As the parson was in a hurry to get away the justice offered to make out the marriage certificate while the minister performed the ceremony. As soon as the preacher had pronounced them

man and wife the justice turned to him and remarked soberly: "My dear sir, you have omitted a very important charge which I usually put in." "Why, how is that," said the minister. "Well," said the justice, "in addition to making them promise to love and cherish each other, you should have made them promise to take and read at least two papers—and I would add to that, pay the printers."

I am told by those who travel a good deal among the farmers that there is a lack of papers taken by the agricultural classes. Is it any wonder, then, ladies and gentlemen, that we continually hear of farmers being taken in by this swindler and that swindler, notwithstanding the papers gave ample warning of these swindlers going through the country? These poor farmers did not know it, because they took no paper.

Is it any wonder that some farmers are always selling at the bottom of the market, when they don't know what the market is, or what tends to elevate or depress the market on any crop? Is it any wonder the farmer is the victim of the lightning rod dispenser, the peddler, the trickster and the unscrupulous dealer, when he won't read and keep posted? Such men seldom profit by these meetings because they don't attend or don't hear of them.

Others, again, think they can take a paper during the winter, when they have time to read, but can't take it during the summer, because they haven't time to read it. We have two farmer subscribers on our list who come in every fall and subscribe for the *Star* for six months. During the rest of the year they take no paper. For six months they have light; they know something of what is going on in this busy, bustling world; the other six months they live in darkness with-

out so much as a *Star* to shed its light along their path way.

No farmer's home is complete without at least three papers. Every farmer should take a good farm paper, one devoted especially to the branch of farming in which he is engaged; a good political paper, of his party persuasion, that he may know what our law-makers are doing; and last, but not least, his local paper, that tells of his neighbor's doings, of the transfers of property, of the local happenings in town, of the meetings of various kinds to be held, and of the thousand and one other things interesting and helpful to him.

Farmers, as a rule, work too many hours. They take too little time to live, to improve their minds, to enjoy life. It is one ceaseless round of labor from early morn till late at night, from one week's end to another, until the farmer is broken down in the very prime of life. You boast of the healthfulness of farm life, yet statistics show that farmers are not as long-lived as merchants or professional men. The reason is because farmers overwork and do not take care of themselves. Ten hours a day in the field on an average is enough. Many farmers have adopted the plan of quitting work at six o'clock every night all summer. Such farmers are not usually behind with their work either. They get a little time for reading in the evening. They get a little time for living, for the man that does nothing but work and eat and sleep does not live, but drags out a miserable existence.

The farmer should be sufficiently educated to speak and write the English language. He should not be like the Galva farmer last year who wrote to John Moore, secretary of the fair here, saying. "Also enter

me for the best jackass, I am sure of taking the premium."

The farmer should be capable of holding office in his town or county. He should know the history and laws of his country. To sum it up in a few words, he should be an ideal citizen.

Now a few words on what the farmer should do :

First of all, he should strive to give his children a better education than he has himself. Competition has become so great in every avenue of labor, intelligence and careful preparation are so much in demand in all trades and professions, that to attain the same degree of success the son must of necessity be better educated than his father. This is just as true of the farmer as of any other profession. As the country gets older and the soil more worn by crops, and insect pests multiply, and fungi increase, a better knowledge of the soil and of fertilizers is demanded. A knowledge of insect remedies and vegetable parasites is needed. The young man with no better education than his father will be almost sure to make less of a success in any line of business in which he engages.

The farmer's son should not only have a good district school education, but he should have a good business education as well, and if the young man should have any desire or inclination for it he should have an agricultural college education. Ah, I see some of you old farmers smiling at the idea of sending a boy to an agricultural college to learn farming. Fifty years ago you might have smiled at the idea, but it is a little behind the times to do it now. A good many smart people then did not believe in any kind of colleges. A good story is told of Bishop Ames. While he was presiding at a Western conference, in examining a can-

didate for the ministry, the subject of colleges came up. One brother got up and made a most bitter speech against colleges. He thanked the Lord that he had never been contaminated by being inside college walls. In the midst of his tirade Bishop Ames interrupted him with the remark, "Do I understand the brother to mean that he thanks the Lord for his ignorance?" "Well, put it that way if you want to," said the brother. "Well," said the Bishop, in his blandest tones, "all I have got to say is the brother has a good deal to be thankful for."

People look upon a collegiate education now as a necessary equipment for life's battles. Nearly all of our leaders in every walk in life are college-bred men. Our eminent statesmen and divines, our lawyers, doctors and ministers, many of our prominent merchants, saw the inside of college walls.

Forty-six per cent. of the graduates of the Michigan Agricultural College follow farming or kindred pursuits. With hardly an exception, these men are leaders in their communities. They are looked up to for advice and counsel. They are the most prosperous farmers in their locality. They use their brains as well as their hands. Many of them are called to fill positions of honor and trust in their towns and counties. They are men of ability. They owe their marked success to their college training. A most remarkable fact is observed in connection with this college. In the last thirty years since the first class graduated, not a single graduate has been known to make a failure of any business in which he has engaged. It has mattered not what occupation he has chosen, he has attained some degree of success in that occupation. "The student at college learns to observe; he learns to

think; he learns to learn," which is the most essential thing anyone can learn. I heard only recently of a farmer living near Champaign, who had several sons; among them was one who wanted to take the agricultural course in the University there. His father laughed at the idea and said, "that it was no use to go there to learn farming." He guessed he knew more about farming than those professors at the experiment station, and he didn't want any of his boys to be spoiled by going there. But the boy persisted and coaxed, until finally the old man gave his consent. As the boy left, the father was heard to remark to his wife: "I am afraid that boy will get high-toned notions in his head and go to the dogs." The boy stayed there a year or two and came home. Among other things, he had learned to test the value of the crop from each field by keeping a book account of all the work done on and all the products sold off from that field. In that way he could tell which crops were yielding the greatest profits. He began this with his father's fields. The old man had been in the habit of raising a good deal of a certain crop because it paid well at the end of the season; the boy showed by the books that this crop did not pay as well as some other crops. The father would hardly believe it, yet there the figures were, and they could not be disputed. As a result, the farmer got to raising the crops that yielded the largest profits. The boy had a good many other suggestions to make, which, carried out, lessened the labor and increased the profits of the farm, till the old man declared that he was worth all the rest of his boys put together.

I want to emphasize this point: If your son wants to go to college, send him if you are able; if not, let him

pay the whole or a part of his own way through school. Any young man with push, energy, good health and a determination to do so can pay his own way through college. I started with only \$150 in my pocket, which I had saved for that purpose, and without a cent of help from any source paid my own way and came out at the end of four years with \$50 in my pocket. Fully one-third of my fellow-students paid their own way entirely. If a young man has no desire for such an education it is folly to send him to college, he will not be likely to turn out well.

The last and most important point which I shall briefly touch upon is this: The home and farm life should be made so attractive that the boys and girls will want to stay upon the farm. Can it be done? Most emphatically I would say, yes it can. But how? Some one immediately suggests that if you want your boy to stay on the farm, get another man's daughter to come and live with him. I might add to this, throw in a good farm. Take the children into partnership with you. Give them an interest in some property about the place. Let them have something they can call their own, they can care for and market. Treat them well. Treat them as your equals and helpers and advisers when they arrive at the age of responsibility. Do not make them work too hard and too long and thus disgust them with farm work. Make the home attractive in the evening with books, papers and innocent amusements. There is something the matter with the farmers' home in which oil is not burned both summer and winter evenings. Place responsibility upon children. Teach them to develop their judgment and business ability. Let them perform business transactions such as marketing grain or

hogs and cattle and buying groceries or clothing for themselves. Don't scold your children. Don't tell your sons that they are the worst boys in seven States. They think that if they have the name they may as well have the game, and again it is a reflection upon yourself; for, after all, they are but a chip off the old block. As the father is, so will be the sons. In all things try and set a good example for your boys and for your boys and girls to follow. It is no wonder that so many boys and girls get disgusted with farm life and leave the farm at the first opportunity. It is because they are overworked and ill-treated. The wise farmer does not think of working his three and four-year-old colts hard and continuously; why not have as much consideration for your boys and girls? Use all your endeavors to make farm life pleasant for them. Make the home the dearest spot on earth. Surround it with comforts and even luxuries if your means will allow. Fill it with love, make it such a place that when your sons and daughters leave it to make homes for themselves their dearest memories will cluster around the old home. If perchance your sons go out into the busy world and chance to hear that old familiar strain, "Home sweet home, O there is no place like home," may it strike a responsive cord in their hearts, may it recall to them many pleasant hours spent in games or reading. The good influence of such a home will be so stamped upon their hearts and woven into their characters as never to be erased.

DISCUSSION.

Mr. Thorpe: I read this paper, take it all summer and winter both, and I would like to ask Mr. Curtis what he furnishes in that paper that is going to benefit the farmer in his business as the farmer?

Mr. Curtis: We give information that ought to benefit the farmer. We give notices of meetings, we give notices of people who are going through the country swindling farmers, we give market reports, and we give the farmer information about his neighbors that may be useful.

Mr. A. B. Hostetter: I have enjoyed the paper of Mr. Curtis very much indeed. I must say that I think one reason why the local papers can not do more for the farmers is that the farmers don't do enough for the local papers, and I would like to move that this association request the local papers of Kewanee to publish Mr. Curtis' article in full.

Motion seconded and carried.

SOME RECENT DAIRY DISCOVERIES.

PROF. E. H. FARRINGTON, EX. STA., CHAMPAIGN, ILL.

Analyzing or testing milk for butter fat by a simple and accurate process which came to light in 1889 is an invention that can be compared in more than one way to the discovery of gold in 1849.

The simple and economical test referred to shows quickly and accurately the per cent. of butter fat in sweet, sour, skim, butter-milk or cream. Sixty different samples of milk can be tested in two hours, at a cost of one-fifth of a cent per test for material, and the process can be easily mastered by almost any one who

NOTE.—The plates referred to by Prof. Farrington in this paper, are not inserted, as the original plates could not be obtained, and it did not seem advisable to have new ones made. The bulletin containing them can be obtained from Illinois Experiment Station, Champaign.

can turn a crank. Supplied with these advantages the process can be easily demonstrated to be worth its weight in gold.

Nearly everyone knows that generally the difference between what is called rich milk and skim-milk is in the amount or per cent. of butter fat each contains, hence the butter fat in milk is for all practical purposes a good measure of its value. Usually the butter fat is only one of the constituents of milk, and of the other the casein is of greater importance to the cheese-maker, while the protein substances, as well as the milk sugar and ash, are valuable food. But the greatest importance must be ascribed to the fat, not only because it supplies us with butter, but it is also essential for the best cheese. It may also be accepted as a general rule that milk rich in butter fat has a proportionally high content of other solids not fats.

Observation has repeatedly taught that *cream* may be "a delusion and a snare" when it is used as evidence for judging the richness of milk. The following incident illustrates this point:

A person using the milk supplied on a city route complained that the milk was poor, almost no cream would rise on it. A chemical analysis of this milk showed it to be slightly above the average composition. This person was accustomed to using milk on the farm where it was subject to no great amount of agitation, and set under favorable conditions. The cream rose much differently on such milk than on the milk bought in the city; although there was not much difference between the two milks in the actual percent. age of water, solids, and fat. We can no more accurately judge of the composition of milk by its color and appearance than we can decide on the flavor of an

apple, whose variety is not known, by simply looking at it.

The process referred to for testing the quality of milk can be made of practical value in several ways; it can be used by town and city milk inspectors to guard the consumers, so that in their milk supply fraud will be detected and honesty protected, and at infinitely less cost than by a chemical analysis.

Any owner of milch cows can make this milk test a very profitable *detective* in his herd. A pair of scales for weighing the milk produced by each cow and a test of the quality of the milk for a time will furnish evidence by which he can decide, not as a matter of opinion simply, but as something clearly demonstrated, which cows should go to the butcher and which he should use for continuing his dairy.

At the present time the most extensive and important use of this milk test is made at creameries, and by its use the patrons can be paid for the pounds of butter fat contained in the milk they bring to the factory instead of the pounds of milk only. Selling milk on the "test plan" is a comparatively new thing, and probably a great majority even of the people interested in milk and milk testing would ask for an explanation of the expression. Nevertheless there is a constantly increasing number of creameries that have adopted this way of paying the patrons for milk, and the honest farmer is beginning to seek, find and patronize them.

Some persons who are particularly interested in butter production have long scanned the dairy horizon for a practical milk test; several have been devised and tried, but I have yet to meet the person who refuses to assign the gold medal to the "Babcock" milk tester, and I will briefly describe it:

Commercial sulphuric acid or oil of vitriol, sp. gr. 1.82, is the only chemical used in this process; such acid can be bought for $1\frac{5}{8}$ cents per pound in carboy lots, and one pound will make about 14 tests. After the milk to be tested is thoroughly mixed, the glass pipette is filled with milk up to the mark. This measure of milk, about a tablespoonful, is run into the glass test bottle, and the graduate full of sulphuric acid is next poured into the test bottle with the milk.

By shaking the test bottle so that the two liquids (milk and acid) mix, chemical action of the acid on the milk begins at once, the mixture turns dark to black color and becomes very warm. The milk is decomposed and the butter fat separated from the other constituents.

Centrifugal motion is then used to make this separation complete and to bring the butter fat into the neck of the test bottle where the quantity of it can be measured by the figured scale.

The capacity of the pipette to be used for measuring out the milk has such a relation to the graduated part of the test bottle, that the scale on its neck indicates per cents of butter fat; so that a milk which contains butter fat that fills the tube of the test bottle from 0 to 3.4 has 3.4 per cent. butter fat. A great many different mechanical devices have been proposed for holding the test bottles and whirling them at a speed of about 800 to 1000 revolutions per minute. The object of all these different machines is to make complete separation of the butter fat in the test bottle from the hot mixture of milk and acid.

When the bottles are in the machines, they occupy a position similar to the spokes of a horizontal wheel, the necks of the test bottles pointing towards the hub.

The butter fat is the lightest part of the mixture in the bottle, and consequently is thrown toward the center and accumulates in the neck where it is easily measured. The use of the milk testers is so simple and so satisfactory that it has been well said that every person who has one immediately appoints himself a committee to tell his neighbor about it.

One feature of my work at the Agricultural Experiment Station, Champaign, Ill., has been to make comparisons of results obtained by these testers with what is called a gravimetric chemical analysis of the same samples of milk.

These comparisons have shown a very satisfactory agreement, and after some practice a person becomes expert enough to test the quality of milk very accurately. A record of observations and precautions useful for making tests has been published in bulletins of this station. One of the most important points to watch is the proper strength of the oil of vitriol used. The bottle containing it must be tightly closed, as it will become too dilute by absorbing water vapor from the air, if left uncorked.

Since this new milk test has been demonstrated to be of so much practical value to creameries, city milk inspectors and dairymen, a number of minds have been working on the problem of saving time by decreasing the number of tests.

It is hardly practicable to *churn* the cream from the milk of each cow in a herd, in order to weed out the unprofitable butter cows. *Testing* each cow's milk shows the per cent. of butter fat in it and a test can be quickly made. When this method of testing each cow's milk is considered, the question at once arises, is it necessary to test the milk given at each milking, and for how long a time?

In the same way, if milk be "sold on test" by creamery patrons, or on any regular route, is the composition of milk uniform enough to depend on one test of it every seven, ten or thirty days, or is the cow machinery set to such an uneven gauge and the tendency of man to err so great, that a test must be made of *every* lot of milk in order to deal fairly and do justly with all?

At the present time almost every one, and especially the farmer, works on such a narrow margin of profit, that the necessary expense of time makes it impracticable to test every lot of milk each day.

A satisfactory substitute for this large amount of test work is obtained by collecting and testing "composite" samples of milk.

If a small quantity of a cow's milk is put into the same glass fruit-jar after each milking, the jar will contain at the end of a week a mixed milk representing 14 milkings, provided the cow was milked twice each day.

This mixture of milk is called a "composite" sample. A test of such a sample has been proposed in place of testing each of the 14 samples.

When more than one cow is to be tested in this way, each one must have a separate "contribution box," plainly marked, so that the daily sample will be put in the right place.

This system has been adopted by creameries where the patrons are paid for the test or butter fat in milk instead of the pounds of milk. A common pint or quart glass fruit-jar is a very convenient receptacle for holding the composite sample of milk.

A jar is provided for each patron and marked with his name. Every time he brings milk to the creamery, it is weighed and a small quantity, about 1-10 of a

quart, put into the jar; at the end of a week or ten days the milk in the jar is tested, and the figures thus obtained, together with the record showing the number of pounds of milk brought, furnish the data for making a calculation of the amount of butter fat supplied the creamery by each patron.

One of the first plans proposed was to add some chemical to keep the composite sample of milk sweet, and as this milk was to be used for testing only, corrosive sublimate was proposed. A very small quantity of this deadly poison will prevent lactic fermentation from developing in milk, and as it can be added in the form of a powder mixed with some aniline dye, this increase in the volume of the milk is not sufficient to be taken into consideration when the milk is tested.

The color given to the mixture by the aniline is supposed to act as a guard against tasting or drinking the poisoned milk.

However satisfactory this method may be, the use of the poison makes it objectionable, especially as the persons who wish to test composite samples of milk are generally unaccustomed to handling poisons. A great many other chemicals have been tried as substitutes for the corrosive sublimate, but they have proved more or less impracticable. For example, I found that by passing a current of sulphuretted hydrogen gas through milk it kept in excellent condition for testing and there was undoubtedly no danger of anyone drinking the milk on account of its foul odor.

After some investigation I have discovered and adopted the following method: Collect the composite samples as before suggested, and make no attempt to keep the milk sweet, but allow it to sour as much as it will. The souring of milk for a week does not percep-

tibly destroy any butter fat, but the curd and whey separate, and this mechanical condition of the milk makes it impossible to take out a small quantity which will fairly represent the whole.

Sour milk can be put into proper condition for testing by adding to it an alkali which will neutralize the acid developed and dissolve the curd. The "powdered lye," sold by nearly all grocers for making soap, can be used for this purpose with good success. By stirring one-half a teaspoonful of this caustic alkali into a pint of sour milk, the separated lumps of curd are soon dissolved and the sour milk becomes as thin and homogeneous as new milk, so there is no difficulty in testing it.

To demonstrate the accuracy of this method of diminishing the number of tests by collecting a composite sample of milk and the practical use of the "powdered lye" on sour milk, I made the following experiment at a creamery.

Twenty patrons were selected and among them were included those who brought milk that varied most from day to day in quantity and quality. As the milk brought by each of these patrons was poured into the large weighing can at the creamery, it was thoroughly mixed and about a pint taken out for the experiment. A test was made of this milk every day and a portion of it put into each of three-quart glass fruit-jars labeled respectively A, B and C. The jars of series A and B contained the poison corrosive sublimate, the jars C nothing but the milk which soon soured, as the temperature of the room where they were kept ranged from 60 deg. to 85 deg. F. The quantity of milk added to jars of series A and C was the same each day, about one-twentieth of a quart, one dipper being used for measuring the milk in these two series. The amount

of milk added to the jars of series B was always the fraction of the pounds of which it was a part, i. e., jar C, patron No. 1, always received one-thousandth of the number of pounds of milk he brought, and jar C, patron No. 2, one five-hundredth; a constant proportion was selected for each patron so that at the end of the week the accumulated sample amounted to about one pint.

By this method there were collected three composite samples of the milk brought by each of the twenty patrons, also a test of each lot of milk used in making up the composite samples.

One point of the investigation was to observe how well the test of the composite samples would agree with the average of the seven daily tests of the milk used to make up this sample. The results proved very satisfactory. The milk in the jars of series A and B had not soured at the end of the week, the cream had separated somewhat, but with a little care it was easily mixed. This can be done by holding the jar right side up and giving it a motion that causes the milk to revolve in it as if on an axis which extends through the center of the jar from top to bottom. This sort of a motion cleans the cream from the sides of the jar and mixes it again with the milk in a very satisfactory way. Unless some such precaution is used to clean the cream from the sides of the jar, a portion of it sticks very tenaciously and vitiates the results of the test.

In the jars of series C, to which no preservative had been added, the milk of the composite samples was sour and curdled; the whey and curd separated. The "powdered lye" was added to all of these samples and by pouring and stirring they soon became evenly mixed and thin as new milk. The action of the lye on sour milk is

hastened by adding it to the milk in small quantities so that the lye is dissolved. If one-half a teaspoonful of the lye is thrown into the milk at once, it collects together in a hard lump which is dissolved with difficulty. The whole process of thinning the thick, sour milk with lye is aided by warming the milk at a temperature of 100° to 150° F, and by letting it stand for an hour or more. Time and heat both help the solvent action. Pouring from one jar to another is also an important factor in getting the milk thoroughly mixed. This way of collecting a composite sample and the use of the "powdered lye" gave entirely satisfactory results. The following illustration may serve to show the practical application at a creamery, and how nearly one test of a "composite" sample corresponds to the average of seven daily tests. The milk brought by each patron is weighed every day, and after a thorough mixing a small quantity is taken out and tested for butter fat. Multiplying the pounds of milk by the per cent. this test shows gives the pounds of butter fat in the milk brought.

A "test" of a composite sample together with the weight of the milk given by each cow during the time the sample was accumulating will furnish very accurate data for calculating the amount of butter fat produced by each cow during the time covered by the test.

It seems hardly necessary to say that the longer such testing as this is carried on the more intimately acquainted the owner becomes with his cows.

VARIATION IN THE DAILY MILK AND BUTTER PRODUCTION OF COWS.

The quantity of milk produced by a cow and the quality of the milk are influenced directly by the individuality, and indirectly by the breed of the animal. Each breed is only a group of individuals of the same kind. The breeds differ from each other by certain characteristics which are preserved so long as conditions are not sufficiently strong to change them. To the distinct characteristics belongs the disposition to produce a large quantity of milk, or milk possessing a specific peculiarity, such as high content of butter fat and casein.

Numerous observations show that with nearly all cows the milk production follows the general course of decreasing in quantity of milk and butter, and increasing in percentage of butter fat as the period of lactation progresses.

By weighing and testing the milk of cows every day, I have observed that lines representing the daily production of milk and of butter fat do not take the course of a straight line down an inclined plane, but are broken, zigzag lines. Some of the results of these observations have been represented graphically in a bulletin of the station.

The broken lines of the diagram show the production of the cows from day to day, and are evidence to illustrate, First: That the variation from day to day in the morning's and evening's milk considered separately was greater than in the mixed milk for the day.

Compare plate 1 with plate 2.

Second: That under exactly the same conditions,

cows differ from each other in the amount of this variation. Compare plates 2 and 3.

Cow No. 2. A very nervous and somewhat vicious animal goes to great extremes, while cow No 5, a mild-eyed "mooly cow," produces milk comparatively uniform in quantity and quality from day to day.

Third: The mixed milk of several cows is more uniform in amount and richness from one day to another than the milk of one cow.

The record of each milking of cow No. 2, plate 1, shows the general tendency to equalize the milk production by going to both extremes. May 19, she gave 12.75 lb. milk in the morning, and 7 lb. at night. The morning milk contained 6.5 per cent. of butter fat, the night milk only 2 per cent. The average per milking of this cow for three months has been 9.35 lb. milk and 3.92 per cent. of fat. In general it can be seen that in this record when one milking was above the average in quantity and quality, the next milking went below, and *vice versa*.

During the 66 days represented in plate 2, the daily quantity of milk from both milkings varied from 23 to 17 lb.; the per cent. of butter fat in the daily milk from 3 to 6.1, and the pounds of butter fat in the daily milk from 0.56 to 1.29.

The daily record of cow No. 5 for the 66 days shows a very uniform per cent. of butter fat, varying only from 2.8 to 3.4. The same regularity is seen in the total daily production of butter fat, 0.65 to 0.42 lb.; and plate 3 shows that the course of the line representing the pounds of butter fat gradually declines from May 1st to July 5th. A decrease in the pounds of milk from day to day is also shown in the record of this cow.

Cow No. 2 is a striking example of occasional extreme variations in milk production, and, contrary to the general statement, the variation in quantity and quality coincide. That is, when she gave a small mess of milk it had a per cent. of butter fat below her average, while the largest milkings were of her richest milk. This does not hold true in the average per cow calculated from the daily records of three cows, for the reason that the milk of cow No. 1 not given here for lack of space showed just the opposite tendency from cow No. 2. Nearly every time when the milk of cow No. 1 increased in quantity it decreased in percentage of butter fat; and as the pounds of milk per day decreased, the per cent. of fat in the milk increased. The milk was richer.

The record of cow No. 5 on this point shows a very uniform percentage of butter fat from day to day regardless of the quantity of milk produced.

These individual characteristics may be more concisely stated thus:

Cow No. 1. The richest milk is given when the quantity is small. The quantity decreases somewhat from day to day.

Cow No. 2. The richest milk is given when the quantity is large. The quantity did not permanently decrease.

Cow No. 5. The richness of her milk was very uniform and changed but slightly. The quantity decreased permanently.

Beginning June 18th, cow No. 2 was given 5 pounds of wheat bran daily, one week later this was increased to 7 pounds per day. The other two cows got nothing but pasture feed, which gradually grew very short in July on account of the severe drought.

By comparing plates 2 and 4 it can be seen that the upper three broken lines across plate 4 are not so irregular as the three lines across plate 2. This makes it very probable that the greater the number of cows in a dairy, the more uniform will be the production from day to day.

During the time of this record, May 1st to July 5th, these cows were exposed to uniformly dry weather. The rainfall for the month of May was .89 in.; June, 2.19 in.; total, 3.07 inches. The average of 10 years for these two months is 9.5 inches.

It is also of some interest to compare the line representing the daily pounds of milk shown in plate 4 with one showing the mean daily temperature.

Although there are exceptions, this comparison shows that as a rule the number of pounds of milk was low when the mean daily temperature was high, and the number was high when the temperature was low. In other words, these two lines give something of the appearance of an irregular picket fence with each picket sharpened at both ends.

The following table shows the highest, lowest and average daily yield of milk, per cent. of butter fat, and pounds of butter fat produced by each of six cows from May 1 to August 1, 1891.

| Patron No. 1. | | | | | Patron No. 2. | | | | |
|---------------|------|-------------------|--------------------|---------|-------------------|---|--------------------|------|--------|
| | 1891 | Milk brt. lbs. | Butter Fat | | Milk brt. lbs. | | Butter Fat | | lbs. |
| | | | test or per ct. | lbs | | | Test or per ct. | lbs. | |
| April 9 | | 159 | x 3.6 | = 5.72 | 658 | x | 4.0 | = | 26.32 |
| " 10 | | 151 | x 3.6 | = 5.43 | 590 | x | 4.0 | = | 26.60 |
| " 11 | | 165 | x 3.8 | = 6.27 | 586 | x | 4.4 | = | 25.78 |
| " 12 | | 172 | x 3.5 | = 6.02 | 587 | x | 4.6 | = | 27.00 |
| " 13 | | 167 | x 3.6 | = 6.01 | 592 | x | 4.5 | = | 26.64 |
| " 14 | | 172 | x 3.6 | = 6.19 | 595 | x | 4.2 | = | 24.99 |
| " 15 | | 193 | x 3.7 | = 7.14 | 580 | x | 4.4 | = | 25.52 |
| Total | | 1179 | | 42.75 | 4188 | | | | 179.85 |
| Average | | | 3.62 | | | | 4.30 | | |
| Test of | | | | | | | | | |
| c'mp'site | | | 3.60 | | | | 4.30 | | |
| sample | | | | | | | | | |
| | | 1179 | 3.60 | = 42.44 | 4188 | x | 4.30 | = | 180.0 |

The record shows that the 1179 lbs. of milk brought by patron No. 1 contained 42.75 lbs. butter fat as shown by the daily test, or 42.44 lbs. if calculated by the composite sample test, a difference so slight as to be of no consequence when the saving of tests is taken into account.

The uniformity in the quantity and quality of milk given by the same lot of cows each day, helps to make the "composite" sample test, practically accurate for calculating the butter fat delivered to the creameries by the patrons each week, and necessitates only one test instead of seven.

This plan of testing composite samples of milk brought to a creamery by its patrons has the same practical value to the dairymen who may use it in testing each of his cows.

Also the average daily record per cow calculated from the total daily production of the whole herd.

Yield of milk, per cent. of butter fat, yield of butter.

| No. of cow and period of milking after May 1. | Pounds of milk | | | Per cent. of butter fat | | | Lbs. of butter fat. | | |
|---|----------------|------|------|----------------------------|------|------|---------------------|------|-------|
| | Daily yield | | | Daily yield | | | Daily yield | | |
| | high | low | avg. | high | low | avg. | high | low | avg. |
| No. 1, to July 27 | 13 | 5.5 | 10.3 | 8. | 4.25 | 5.28 | .666 | .312 | .539 |
| No. 2, to Aug. 1 | 23 | 15. | 18.7 | 6.45 | 3. | 4.7 | 1.297 | .574 | .885 |
| No. 3, to July 1 | 11 | 4 | 7.9 | 4.3 | 2.9 | 3.56 | .369 | .16 | .28 |
| No. 4, to Aug. 1 | 45 | 25.5 | 38.2 | 3.95 | 1.7 | 2.99 | 1.71 | .603 | 1.141 |
| No. 5, to Aug. 1 | 20.5 | 10 | 15.0 | 3.6 | 2.8 | 3.14 | .653 | .33 | 1.498 |
| No. 6, July 6 to Aug. 1 | 26.5 | 20.5 | 24 | 4.4 | 2.7 | 3.31 | 1.166 | .623 | .792 |
| Avg. for herd | 22 | 16.6 | 19.4 | 4.58 | 3.26 | 3.92 | .858 | .483 | .707 |

This table as well as the diagrams show that a county, state or World's Fair test of a cow's milk for one day only, may give a decidedly wrong impression of the cow's capacity for a week, month or year.

At the last State Fair at Peoria, Sept. 28 to Oct. 2, 1891, there were 28 cows tested. These all entered in competition for premiums, offered to cows over and under 3 yrs. old that produced the most butter fat in their milk of one day.

A prize was offered to the cows of each *breed* entered in the milk test and a sweepstakes prize to the best cow of them all.

These were entered and tested, seven Holstein Fresians, thirteen Jerseys, six Ayrshires and two Short Horn cows. The following table gives an average per cow record, made from these tests.

| | Lbs. of milk | | Per cent. | | | | Tot'l lb. for the day 24h. | | Pounds produced | |
|---|--------------|------|-----------------------|-----|----------------|-----|-------------------------------|-------|-------------------------------------|------------|
| | | | butter fat in milk | | Milk but'r fat | | | | per 100 lb. of cow. approximate. | |
| | Mg | N'n | Nt | Mg | N'n | Nt | M'l | but'r | Milk, | butter fat |
| Holste'n-Friesian cows over 3 years old | 25.7 | 13.6 | 12.8 | 2.3 | 3.6 | 3 | 52 | 1.55 | 3.7 | 0.109 |
| Holstein-Friesian cows under 3 years old | 17 | 8 | 9.3 | 2.2 | 3.3 | 2.4 | 32.2 | 0.8 | 3.2 | 0.03 |
| Jersey cows over 3 years old | 13 | | 12 | 5.1 | | 4.8 | 25.5 | 1.28 | 3 | 0.152 |
| Jersey cows under 3 years old | 9.8 | | 10.3 | 4.5 | | 4.1 | 20.1 | 0.86 | 2.9 | 0.124 |
| Ayrshire cows over 3 years old | 13 | | 13 | 3.4 | | 3.6 | 26 | 0.89 | 2.9 | 0.09 |
| Ayrshire cows under 3 years old | 8.7 | | 8.5 | 3.8 | | 3.5 | 17.2 | 0.64 | 2.4 | 0.09 |
| Shorthorn cows over 3 years old | 7 | | 7 | 3.8 | | 3.9 | 14.1 | 0.54 | | |

At the Dairy show held in connection with the Fat Stock show at Chicago, Nov. 11 to 21, 1891. The milk test was required to be for three days. Three cows were entered and tested, all the details I have already published in a bulletin of the Expt. Station, without giving them here. I will only mention the daily butter fat production of the best cow tested there, as follows:

| | Total pounds | | |
|-----------|--------------|------------|------------------------------|
| | Milk | Butter fat | Butter with 80 per cent. fat |
| First day | 81.5 | 3.25 | 4.06 |
| Second " | 80.5 | 3.03 | 3.80 |
| Third " | 83.3 | 3.04 | 3.80 |
| | 245.0 | 9.32 | 11.66 |

DISCUSSION.

MR. ALLEN: I would like to ask Professor this question: Was your man who carried out these experiments particular about being punctual, did he milk at a particular time night and morning, or is that a secondary matter?

PROF. FARRINGTON: I think he follows the practice of most farmers.

MR. ALLEN: The next cow you test I would like you to insist on the cow being milked exactly to the minute. My own experience is that it makes a great deal of difference. The rules of our Jersey Cattle Club require that the cow be milked at a stated time in making tests. I made a test once for thirty days of a cow, and at six o'clock exactly, I made it a practice to drop all other work, but occasionally something would happen, and I would be half an hour late. At those times I would get more milk, of course, and I also found I got a larger amount of butter, whereas if I had milked before this stated time, I got less milk naturally, and there would be a great deal less butter in it. I would like to have the professor, in his next experiment, keep that in sight.

Mr. Sawyer took the chair.

MR. ALLEN: You remarked of one cow, in particular, that when she gave a larger amount, she gave richer milk. Ordinarily the general impression is that when they give a small amount of milk it is richer.

PROF. FARRINGTON: I think that is the rule.

MR. ALLEN: My experience has most always been the other way. When I get a large amount of milk, I can generally get more butter out of it.

PROF. FARRINGTON: I was surprised when I found that result in this case. I think possibly it may be a peculiarity of those sensitive, highly-organized Jerseys. None of the other cows that I have tested have shown that.

MR. JOHNSON: On Sunday mornings our cows are always milked half an hour or an hour later, and as a result, we always get more milk, but that milk never yields as much butter fat as on other days.

MR. GRAHAM: I used to set my milk in those deep setters, and when, for some cause or other, the cows were not doing as well as usual, the amount of cream measured on the can, indicated less than when they were doing well.

MR. LLOYD: When my grade Jersey gives only a little milk it is mighty thin compared with other times.

MR. HOSTETTER: I think you can't tell by the looks of the milk how much butter fat there is in it; unless you have tested it by the Babcock tester, you don't know.

MR. SAWYER: I have noticed in testing that as a rule cows under excitement will give a less percentage of butter fat. There are cases on record, however, where cows under excitement will give much richer milk. The individuality of the cow has got to decide that question.

The president resumed the chair.

MR. VAIL: When the milk ran up so high in the percentage of butter fat, wasn't there a corresponding decrease in the amount of milk?

PROF. FARRINGTON: That is what I look for, of course, and that has been so generally in cows, but you see by this record there was not a corresponding decrease.

MR. MACMILLAN: In regard to the composite test, is there a point beyond which it is not safe to keep the milk, in other words, could we not make the test once a month as well as every week.

PROF. FARRINGTON: I do not doubt but what that would be possible; I don't know of its ever having been tried.

THE CHAIRMAN: I have tried it between three and four weeks, and it made a very clean, nice test.

PROF. FARRINGTON: You probably won't destroy any butter fat by keeping it any length of time. In November I took and filled twenty test bottles, and have been testing one of those test bottles once a week ever since, and the pertentage of fat has not changed.

THE CHAIRMAN: It is necessary to keep your bottle corked so there will be no evaporation of the water in the milk.

PROF. FARRINGTON: That wouldn't make any difference; the fat wouldn't get out.

MR. KING: I think the Professor stated that the difference between the daily test and the composite test was a little in favor of the patron, was it not?

PROF. FARRINGTON:—If the composite test shows a little larger per cent. of fat than the daily test, it will be in favor of the patron, but, as I told you, there was only one case where this happened, and the difference was very small in that case. In the tests that I have made, the difference is as liable to be one side as it is on the other. On the other hand, the time saved in making the composite test, balances any slight gain in the other respect.

OBJECTS FOR WHICH WE AS AN ASSOCIATION SHOULD WORK.

W. R. HOSTETTER, MT. CARROLL, ILLS.

THE WORLD'S FAIR.

We should appoint at this meeting some person or persons to see that our interests are properly represented at the World's Fair. There are a great many things to be considered. I know of no other interest

so difficult to present so that everyone can comprehend its importance. We should try to obtain the views of practical dairymen, creamerymen and cheese makers. It is only once or twice a year that so many of us are together. We should exchange our views freely. Our state can not afford to let any other state make a better showing of the dairy industry. Illinois practically controls the butter market of the United States. We must show to the world just what we have.

SOME SYSTEM.

We should have some system by which we could communicate with the dairymen over the entire state. A correspondent of the association in each township in the state who is posted and interested in dairy matters, to whom the association could write for information, would be a great help.

A PAMPHLET.

A pamphlet issued by this association giving a few facts in regard to dairy matters, with suggestions in regard to starting, equipping and running butter and cheese factories might be of use. A person conversant with dairy matters would be astonished to see some of the letters I have received, asking questions that show how little is known about simple matters.

DAIRY SCHOOL.

But I think the most important thing for our association to consider is the matter of a State Dairy School in connection with our University and Experiment Station at Champaign.

Dairying requires more skill than any other branch of farming; a dairyman must be a farmer and stock-breeder and the better he is posted in these branches of farming the more successful he will be as a dairy-

man. There is a general impression that if a person is neat and clean in the making of butter that it will be good. Cleanliness is absolutely necessary in making healthful butter, but there are many other things just as important and must be connected with it to have a superior or even a fair article. A single cow's hair found in your butter as you are eating may not mean that there is an atom there that is dirty or unhealthful, but as it adds nothing to the appearance or flavor it is better kept out, as the suspicious naturally wonder where the rest of the cow is.

Farmers are naturally very hard to induce to take an interest in things that are for the general good in educational matters when it requires co-operation. I do not think it is because they feel a less interest in such matters, but because it is more difficult to reach them. It is the little things in dairying that make it a success or *not* financially. A thermometer costing 25 cents is a very small item. How many butter makers on the farm have them? I will venture to say not one in a hundred. I have no doubt that the fact of not having this little inexpensive thing and the knowledge how to use it is costing this state half a million dollars a year. If we had the superstitions of a few generations ago and some enterprising yankee should come to us with one and tell us it was a charm and if we put it in the cream and warmed it until the mercury reached a certain point that all witches would disappear, and the butter would come within a specified time, we would buy them at \$5.00 or \$10.00 and consider them cheap. Every person that has made butter knows that temperature is very important but they do not realize its importance in dollars and cents.

The mass of our butter makers need to have these

little matters brought directly to their notice in a practical way. Ninety-nine out of every one hundred of the farmers that are making butter, are leaving $\frac{1}{2}$ to $1\frac{1}{2}$ lbs. of butter in every 100 lbs. of milk that they churn. This they carry out to their hogs, and thus feed butter worth from 25 cents to 30 cents a pound to hogs that will sell for 4 cents. In the aggregate this loss is enormous.

The seed germ of a single grain of corn is very small and a seemingly insignificant thing, but it contains a little oil. There is one establishment in Chicago that manufactures twenty different products from corn; among them is a certain oil. The amount of corn used is 15,000 bushels a day, and from the germs of it they obtain from fifteen to twenty barrels of this oil. Every particle of the corn is turned to some use. Take another instance, a car load of cattle or hogs are bought by a large packing firm, every pound of them is made into a merchantable product. There is practically no waste. Men have and are accumulating immense fortunes out of apparently insignificant things that under ordinary circumstances would be wasted. The reason is that by concentration, apparently worthless items, by proper manipulation, become valuable.

The evils that grow out of this concentration it is not the object of this paper to discuss. As a rule they are a disadvantage to the producer. I simply want to show why it is impractical for individual capital to be so concentrated as to produce these results in farming operations, and that it is absolutely necessary that our government should not only maintain our experiment stations so well started, but should do everything to increase their usefulness. The amount expended is nothing compared to the good done. I believe that

the milk tests invented in our experiment stations are worth all the money that has been expended, if our dairymen could be made to realize their importance. It is impossible for the private dairymen to work out these important questions. He can not afford to do it. There is a limit to the number of cows that can be kept in one herd profitably. From my own experience I believe that the profit per cow will decrease after the number reaches fifty or seventy-five. When it comes to manufacturing the product from these cows the larger the quantity the less the cost per pound to manufacture.

The man with a few cows can really produce the milk for less money than the man with a very large number, equal intelligence being used in both cases. The ordinary farmer, in fact does not produce his milk as cheaply as a man who makes a business of dairying and follows it intelligently and systematically, from the fact that generally most farmers look upon the income from butter something as they do that from the poultry, as simply a little extra money to buy cigars for themselves or pin money for their wives. Did you ever think that the butter for an ordinary family costs as much and very often more than the flour, to say nothing of the value of milk and cheese consumed. The value of the dairy product of the United States is so great that we can scarcely conceive of it and still the dairy industry is not one-half developed and a very large per cent. of butter and cheese made does not realize its true possible value from ignorance in its manufacture. We must have schools to educate our dairymen, our butter and cheese makers, as we do our doctors and our lawyers. There is no more reason why an incompetent person should be allowed to have charge of a butter or cheese factory, where the health

of thousands may depend upon the quality of the article made, than there is that the man that takes charge of them after they are sick should be allowed to practice medicine without having something to show that he is capable.

In our cities, in factories, the engineer must have a certificate stating that he is capable of running the engine, that the lives of employees may not be endangered. How much more important that dairy-men and manufacturers of dairy products should not be ignorant in their profession. We must have schools where dairying can be taught as a science, a number of States have such schools now; we must not be behind them. Let us agitate the matter and see that the next legislature gives us an appropriation worthy the industry, and that we have a dairy school connected with the State University and Experiment Station, that shall be second to none in the United States. It will give the consumers confidence in our products. It will give them a more healthful article. It will educate the dairymen and make them understand that there is something in their calling besides milking and feeding the cows and putting the money for the product in their pockets. Giving feed to a cow and milking her does not make a man a dairyman any more than giving pills to a patient makes a person a doctor. It is not the speech that makes a man a statesman. It is the life, the motive, that makes any calling honorable or dishonorable, worthy or unworthy. As an industry we have immense obstacles to overcome. We must compete with fraud, with concentrated capital and greed for wealth.

A substitute for butter, *if healthful*, is perfectly legitimate if sold upon its merits.

Adulteration is a fraud and people should denounce it in everything.

It is utterly impossible to concentrate capital enough to control dairy products.

Whatever is done for the good or injury of the industry is felt from one end of the state to the other, and affects its welfare. Now think over this matter of a State Dairy School, talk it over with your neighbors, get a popular feeling awakened in its favor and we will have an institution that will help to bring culture, and necessarily refinement to our country homes, and prosperity to our commonwealth.

MR. W. R. HOSTETTER: In Wisconsin I was surprised last week to see what they are doing in the dairy school. They have a building that cost about \$33,000, and they have about one hundred pupils. I expected to see a lot of boys in here, and I found that there were only two under twenty. Those young men are taking a regular course and there are several who have been through college and are attending this school exactly as they would a medical or law school, to fit them for life's work. There is no other place where so many farmers will meet a man in a social way as at the head of a creamery or cheese factory; and when men filling these positions are college educated men their influence will be such as to greatly benefit our farming population.

ANNUAL REPORT OF TREASURER.

Balance in hand

Feb. 17, 1891, \$ 632.26.

Membership fees 81.00.

State Appr'iation 1,000.00.

\$1,713.26.Expenses of Con-
ventions, prem-
iums, etc.

\$318.85.

Donat'n to Nat'l.

Ass'n.

200.00.

Advance pay on
report

400.00.

918.85.

Balance in Treasury

\$794.41.

Respectfully submitted,

J. H. WHITE,

Treas.

We, the committee appointed to examine the display of creamery and dairy implements on exhibition at the Illinois State Dairyman's Association at Kewanee, Feb. 24, 25 and 26, 1892, find a creditable display of implements and appliances as follows:

Adams' Dairy Churn, manufactured by Aledo Mfg. Co., Aledo, Ill.

Thatcher's Butter and Cheese Color, Thatcher Mfg. Co., Pottsdam, N. Y.

Cornish, Curtis & Green, Ft. Atkinson, Wis., Babcock Milk Tester.

Perry's Concentrated Butter Color, manufactured by J. S. Strickler & Co., Sterling, Ill.

Chris. Hansen's Butter Color & Rennet Extract represented by J. H. Monrad.

Mark C. Farr, Baby Separator, 610 Western Office building, Chicago.

Polar Creamer Co. Cold Setting Process. Lafayette, Ind.

Diamond Crystal Salt, Joy, Morton & Co., Chicago.

F. B. Fargo & Co., large 300 lbs. capacity Butter Worker. Lake Mills, Wis.

Alexander Jumbo Separator; Davis & Rankin Building and Mfg. Co., Chicago. Capacity 2,500 lbs. per hour. Represented by J. W. Crane.

D. H. Roe Co., Babcock Milk Tester, with Roe's improved swinging head—with traveling outfit consisting of bottle tray and telescope case. Roe's Union milk and cheese vat; Roe's Separator heater vat; Alpa De-Laval Separator, capacity 2,000 lbs. milk per hour.

Creamery Package Co., 20 N. Clark street, Chicago, showed a cedar churn and Beimling Milk Tester.

Russian Separator; model of 1892; exhibited by P. M. Sharpless, Elgin, Ill.

Henry H. Shufeldt & Co., Grano Gluten Feed, Chicago.

| | |
|-----------------|--------|
| JOHN S. SEELEY, | } Com. |
| H. L. BOWEN, | |
| H. W. MOSES, | |

RESOLVED, That this association heartily seconds the suggestions made by the president in regard to oleo-margarine, towit —“ Favoring the Hatch original package bill, the appointment and maintenance of a commissioner whose duty it shall be to enforce such a bill and the appointment of a committee on legislation to look after and suggest such measures as will advance, preserve and subserve the best interests of the dairyman.”

RESOLVED, That this association urge upon our dairy-men and our factory men the importance of preparing for the grandest exhibit the world has ever seen of dairy cattle, machinery, products and methods at the Worlds Columbian Exposition to be held at Chicago in 1893.

RESOLVED, That the thanks, of this association are due to the railroads which have furnished special rates to the members traveling over their roads.

RESOLVED, That the following suggestions made by Mr. A. B. Hostetter, express the sentiment of this association:

WHEREAS, The loss to the dairymen of the United States is very great from the abortion among cows, and is a matter that can not be solved by individual effort,

THEREFORE, RESOLVED, That it is the sense of this association that the question of abortion among cows, should be taken up by the National Department of Agriculture or our Experimental Station with the object of giving it the most thorough scientific investigation.

RESOLVED, That our secretary be requested to confer with the directors of the Illinois Experimental Station in regard to inaugurating this work."

RESOLVED, That we express our confidence in the Dairy Committee of the State Board of Agriculture, and request that they will earnestly and seriously, continue their efforts to secure for the dairy interests of Illinois, an appropriation that will give these interests a representation at the Columbian Exposition equal to their value as compared with other industries of the State.

RESOLVED, That a vote of thanks be extended by this association to the people of Kewanee for their

instrumental and vocal music given by the men, women, children and dairymaid, for the ample facilities afforded for exhibiting and running dairy machinery, and for the royal way in which we have been entertained.

Com. on { E. H. FARRINGTON.
Resolutions { MRS. FRANK E. GOOD.
 { RALPH ALLEN.

The report of the Committee on Resolutions was adopted.

MR. A. B. HOSTETTER: I want to say a word now as a member of the Illinois State Dairymen's Association. Within the last two days there has been a committee appointed by the World's Fair commission to get the views of this association. Now, I want to ask you what have you given me by way of an expression of this association that I could take back in regard to what you actually want of the World's Fair.

THE CHAIRMAN: We have given you a committee who are to meet as soon as possible, next week probably, to formulate a complete plant and tell you gentlemen what we want, and insist upon your giving it to us.

MR. HOSTETTER: You have very properly appointed a committee to attend to this matter at Champaign, and other committees, but you have made no provision whatever, in regard to how they shall be compensated. If those gentlemen can afford to spend ten or fifteen dollars of their money and time to go there, well and good. I think an institution of this kind ought not to expect to put so important a work as that into the hands of men without making some provision for at least paying their expenses. I know how hard it is to interest the dairymen of this State, or to get any sort of action among them. There will be a great deal of

work for this committee to do, they must gather together statistics and figures, we have got to have the co-operation of every dairyman in the State, or they will not be represented as they should be at the World's Fair.

THE CHAIRMAN: I believe there is no other business before the association, allow me to say to the members of the association, and to the people of Kenawee, in the name of the association, that we thank you for your prompt and kind efforts to make this association a success, and I hope I have made very many acquaintances, although I have not had an opportunity of being introduced to you all, I have seen your faces, and I shall remember them, and I hope to see you all from this time at our meetings.

The convention adjourned *sine die*.

THE WORKING DAIRY.

For the first time in the history of the association a complete creamery outfit was on exhibition and in practical operation.

The local committee with Mr. E. M. Vail as chairman, provided an excellent room belonging to the Peters Pump Co., with all the necessary shafting and steam for running separators, churns and butter worker.

Kewanee not being in a dairy section, cans enough could not be obtained to supply the farmers. This made it necessary to bring the milk in jugs, common milk setting cans, churns, stone jars and in fact almost everything that would hold milk. The rain poured and the roads were as bad as they could possibly be, but the farmers were interested and brought in over three thousand lbs. of milk. The intention was to pay every man according to the amount of butter fat in his milk. But unfortunately as the testing was going on the table upon which were a number of jars and cans filled with milk, became overloaded by the weight of spectators anxious to see the testing, and gave way. This caused the breakage of several jars and the loss of considerable milk. However there was milk enough left to make 130 lbs of fine creamery butter which was eagerly taken by the Kewanee grocers at 30c per lb.

There were three separators on exhibition, the DeLaval, the Improved Russian and the Alexandria Improved Jumbo, besides the Baby Hand Separator. This gave visitors an opportunity to see the different machines side by side, which was appreciated.

The working dairy was a success and the Association tenders its thanks to the different supply dealers who gratuitously furnished all the machinery necessary, and to the citizens of Kewanee for room and motive power.

LIST OF AWARDS.

CLASS A.—DAIRY.

List of those scoring 90 points or more:

| | | |
|-------------------------------------|-----------|-----|
| J. G. Spicer, Edelstein, | - - - - - | 95 |
| Mrs. N. E. Allen, Beaver Dam, Wis., | - - - - - | 93 |
| Miss Daisy Good, Kewanee, | - - - - - | 92 |
| Miss Floy Porter, Kewanee, | - - - - - | 91 |
| L. M. Brown, Gurney, | - - - - - | 91 |
| Geo. H. Baldwin, Mendon, | - - - - - | 90 |
| J. N. Woods, Gardener, | - - - - - | 90 |
| Mrs. P. L. Younker, Latimer, Iowa, | - - - - - | 90 |
| Miss Lottie Younker, Latimer, Iowa, | - - - - - | 90 |
| Mrs. J. A. Case, Earlville, | - - - - - | 90 |
| Mrs. Albert Earley, Kewanee, | - - - - - | 90½ |

Each package of butter scoring 90 points or more received as first prize:

| | | |
|--------------------------------|-----------|---------|
| 1 copy Western Rural, | - - - - - | 1 year. |
| 1 copy Farmer's Review, | - - - - - | 1 year. |
| 1 copy Farm, Field & Stockman, | - - - - - | 1 year. |
| 1 copy Elgin Dairy Report, | - - - - - | 1 year. |

CLASS B.

CREAMERY WHOLE MILK.

| | | |
|---|-----------|-----|
| H. L. Bowen, Blood Point Fact, Belvidere, | - - - - - | 93 |
| N. Wallace Fielding, | - - - - - | 92½ |
| H. J. Youngs, Esmond, | - - - - - | 92 |

| | | | | |
|--------------------------------|---|---|---|----|
| W. E. Walden, Stillman Valley, | - | - | - | 91 |
| Wm. Clelland, Wauconda, | - | - | - | 90 |

Each package of butter scoring 90 points or more received as first prize:

| | | | | |
|--------------------------------|---|---|---|---------|
| 1 copy Western Rural, | - | - | - | 1 year. |
| 1 copy Farmer's Review, | - | - | - | 1 year. |
| 1 copy Farm, Field & Stockman, | - | - | - | 1 year. |
| 1 copy Elgin Dairy Report, | - | - | - | 1 year. |

SWEEPSTAKES DAIRY.

For the highest score association prize, cash \$3.00.

Special Prize, offered by the Genesee Salt Co., Piffard, N. Y., F. A. Tripp, Manager, Chicago; Best Dairy Butter,—5 56-lb sacks Genesee Factory Filled Salt, \$3.50.

Offered by J. H. Monrad, Western representative Chris. Hansen's Laboratory, 58 N. Clinton street, Chicago; Best Dairy Butter, one doz. 25c bottles Hansen's Danish Butter Color, value \$3.00.

Offered by D. H. Roe & Co., 60 N. Clinton street, Chicago: One four bottle Babcock Milk Test with Roe's improved swinging heads, value \$8.00.

Offered by Creamery Package Mfg. Co., 20 N. Clark street, Chicago: Best Dairy Butter, one two-bottle Beimling Milk Tester, complete, value, \$10.00.

Won by J. G. Spicer, Edelstein, Peoria county, Ill. Score, 95 points.

CLASS A.—DAIRY.

For package having second highest score, Association prize, \$2.00.

Special prize, offered by J. H. Monrad, 58 N. Clinton street, Chicago, Western representative Chris. Hansen's Laboratory, $\frac{1}{2}$ doz. 25c. bottles Hansen's Danish Butter Color.

Won by Mrs. N. E. Allen, Beaver Dam, Wis. Score, 93 points.

SWEEPSTAKES CREAMERY.

CLASSES B AND C COMPETING.

The package of creamery butter having the highest score, association prize, cash \$3.00.

Offered by the Genesee Salt Co., Piffard, N. Y., F. A. Tripp, Manager, Chicago: Best creamery butter, 5 224-lb. sacks Genesee Factory Filled Salt, value, \$12.50.

Offered by J. H. Monrad, Western Representative of Chris. Hansen Laboratory, 58 N. Clinton street, Chicago: For the tub of creamery butter scoring the highest number of points, three gallons Hansen's Danish Butter Color, value, \$7.50.

Offered by D. H. Roe & Co., 54—61 N. Clinton street, Chicago: One of Roe's 8-bottle Babcock Milk Test with Roe's improved swinging heads complete, value, \$18.00.

Offered by Elgin Butter Tub Co., Elgin, Ill., 50 butter tubs.

Won by H. L. Bowen, Blood Point Fact, Belvidere, Ill. Score, 93 points.

CREAMERY CLASS.

For second highest score, Association prize, cash \$2.00.

Special prize offered by J. H. Monrad, 58 N. Clinton street, Chicago, Western Representative Chris. Hansen's Laboratory: Two gallons Hansen's Danish Butter Color.

Won by N. Wallace, Fielding, Ill. Score 92½.

CREAMERY CLASS.

GATHERED CREAM.

Highest score, W. E. Walden, Stillman Valley, Ill., score 89. Second highest score, W. H. Taylor, Davis Junc., Ill. Score 87.

CLASS D—CHEESE.

Each cheese scoring 90 points or more will receive as first prize:

| | | |
|-------------------------------|---------|---------|
| 1 copy Prairie Farmer, | - - - - | 1 year. |
| 1 copy Western Agriculturist, | - - | 1 year. |
| 1 copy Orange Judd Farmer, | - - | 1 year. |
| 1 copy Elgin Dairy Report, | - - | 1 year. |

SWEEPSTAKES.

For the highest score, association prize, cash \$3.00.

Special prize, offered by J. H. Monrad, Western agent Chris. Hansen's Laboratory, 58 N. Clinton street, Chicago, three gallons Hansen's Danish Cheese Color.

All the above won by S. G. Soverhill, Tiskilwa, Ill. Score 91 points.

GRAND SPECIAL PRIZES.

For Best Pail Separator Butter in the show, The Creamery Package Mfg. Co., N. Clark street, Chicago, offered. One Six Bottle Beimling Milk Tester complete, value \$20.00.

Won by H. L. Bowen, Bloods Point Fact, Belvidere, Ill. Score 93 points.

LADIES' SPECIAL PREMIUMS.

To the lady having the highest scoring dairy butter in package of not less than 5 lbs., the Polar Creamer Company, LaFayette, Ind., offered one of their "Polar Creamers," style C, No. 2, 16 gallon capacity, value, \$20.00.

Won by Mrs. N. E. Allen, Beaver Dam, Wisconsin. Score 93.

To the second highest scoring butter made by a lady, the Peters Pump Company, Kewanee, Ill., offered one of their best cistern force pumps.

Won by Mrs. Albert Earley, Kewanee, Ill. Score 90½.

SPECIAL PREMIUM.

Corish, Curtis & Green Mfg. Co., Fort Atkinson, Wis., offered the following special premium:

To the person who shall read at this convention a paper containing the best original ideas on dairy

matters, and in the fewest words, we will give a 10 bottle Curtis' Babcock Milk Tester, worth \$16. The stenographer of the Convention to be the judge.

Won by J. H. Monrad, Chicago, Ill., paper No. 3, page 187.

The stenographer considered the paper read by Mrs. Chas. Bude, Chadwick, Ill., paper No. 4, page 187, as next in merit to Mr. Monrad. Upon learning this Mr. Monrad very gallantly divided the premium with her, each of them taking a smaller sized tester.

Special offered by J. S. Strickler, Sterling, Ill., manufacturers of Perry's Concentrated Butter Color.

First, won by J. G. Spicer, Edelstein, Ill.

Second won by Miss Nellie May, Kewanee, Ill.

The Grand Sweepstakes Butter was salted with Genesee Salt, the Genesee Salt Co., Piffard, N. Y., F. A. Tripp, manager, Chicago, gave 10 224 lb. sacks Genesee Factory Filled Salt, value, \$25.00.

Won by J. G. Spicer, Edlestein, Ill. Score 95.

HENRY COUNTY SPECIAL.

Offered by George A. Anthony's Pharmacy for the best pail of butter made in Henry county, \$5.00 in cash. Open to any one in the county.

Won by Miss Daisy Good, Kewanee, Ill. Score 92.

YOUNG LADIES' PREMIUMS.

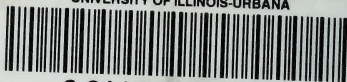
Miles & Minnick, dealers in groceries and crockery, Kewanee, Ill., offered as premium for the best package of dairy butter made by a young lady from 15 to 18 years of age, one 56-piece Decorated Tea Set, Doulton's Sorrento Ware.

Won by Miss Daisy Good, Kewanee, Ill. Score 92.

C. S. Shilton, dealer in dry goods, Kewanee, Ill., offered for the best package of butter made in either Henry, Stark or Bureau counties, by a girl under 16 years of age, five dollars in cash.

Won by Miss Daisy Good, Kewanee, Ill. Score, 92.

UNIVERSITY OF ILLINOIS-URBANA



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